THE

ENTOMOLOGIST'S ANNUAL

FOR

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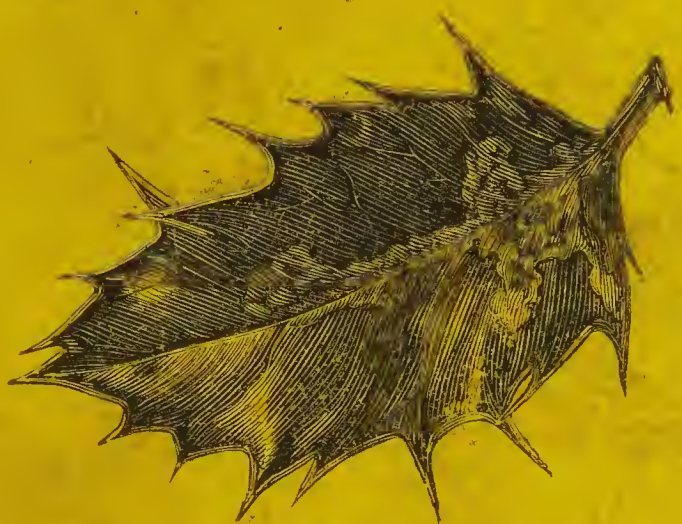

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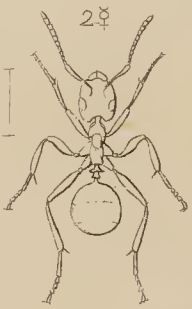

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THE

ENTOMOLOGIST'S ANNUAL

FOR

MDCCCLXV.

"Chill airs and wintry winds! my ear
Has grown familiar with your song;
I hear it in the opening year,—
I listen, and it cheers me long."

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

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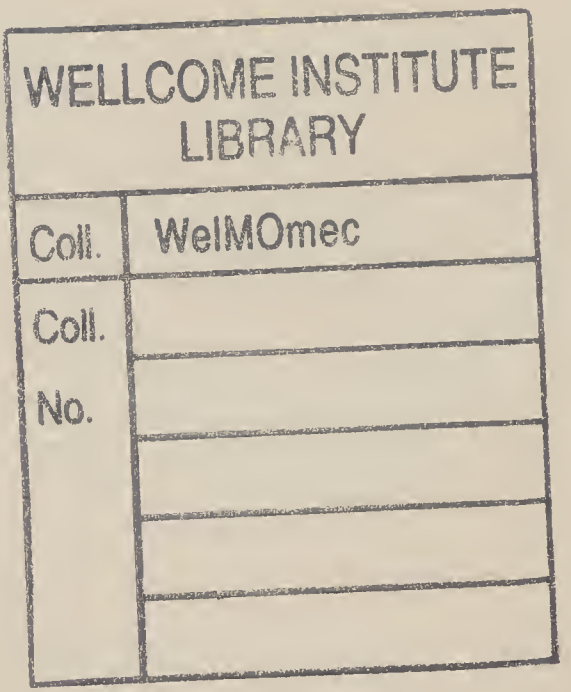

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DEVONSHIRE.

By H. T. Stainton, F.L.S.

Sixteen years have now elapsed since I paid my first visit to Devonshire, and since the year 1848 scarcely a year has passed without my paying one or two visits to that county.

My first impressions were certainly disappointment. Having read so much of the beauties of Devonshire, I had raised my expectations to such an extent, that, as too frequently happens, not only in sight-seeing, but also in other aspects of life, a re-action was inevitable, and now, after abusing for years the county of Devon for being over-praised, I am beginning to appreciate better its actual charms.

An abundance of insects is certainly not one of the attractions of Devonshire; in no part of Devonshire which I have explored have I found Lepidoptera as numerous, either in species or in individuals, as Kent or Surrey, and with the exception of the still unique *Ornix Devoniella* I have not met with a single species peculiar to the county.

Owing to the physical configuration of Devonshire, it is an extremely well-watered county: lying well to the west and with a western coast, the clouds coming from the Atlantic, saturated with moisture, are obliged to pay toll as they pass over the high table-lands of Dartmoor and Exmoor, whence stream down in a northerly, westerly and southerly direction the Lynn, the Taw, the Torridge, the Tamar, the Tavy, the Dart, the Teign and the Exe. These rivers, which in their higher courses are rushing mountain-streams, dashing over

rocks and stones, nearly all terminate in large estuaries, which at high water have the appearance of lakes, and give in themselves a peculiar character to much of the Devonshire scenery. The abundance of wood on the steep slopes, much of the ground being at an angle, ill adapted for agriculture, and the extreme richness of the autumnal tints of the foliage, afford another peculiar feature of the landscape.

The excessive rain-fall in Devon, nearly double that we experience in London, does not necessarily imply a proportionate amount of bad weather; a large amount of the Devonshire rain falls at night and falls in torrents; and it will frequently happen that, after a pouring night, the day will be brilliant with a clearness of atmosphere and depth of blue in the sky, such as we do not see in other parts of England. Speaking of Dawlish and Bideford, the two parts of Devonshire with which I am best acquainted, I should say that, though there is far more rain there than near London, there is also far more sunshine.

That the ground is often not dry for weeks together I must admit, but even in that respect the county has turned over a new leaf during the past summer and been troubled with extreme drought; possibly those who visit Devonshire next summer may have to encounter an unusual pluviosity to make up for the scarcity of rain this year, and may meet with such disappointments as that I experienced on my first and only visit to Linton, when it rained so continuously that all my sight-seeing was done under an incessant drizzle, and any inducement to prolong my stay was wanting in the total absence of any indication of the slightest improvement in the weather. The lofty hills which there come close to the coast had their summits enveloped in clouds, which rarely allowed a glimpse of the actual outline. Perhaps on that very account they might have a more savage and grander look; but

I have no notion whatever of the appearance which Linton and the valleys of the East and West Lynn may assume under the influence of bright sunshine.

Of Ilfracombe, on the other hand, I have a very pleasing recollection, having only once seen it on a bright day, where the edges of the rocks stood out well against the sky, and the samphire waved merrily in the breeze.

Braunton Burrows is an extensive range of sand-hills, to the north of the estuary through which the waters of the united rivers Taw and Torridge find their way to the sea. The sand-hills on the southern side of the estuary are called Northam Burrows, and are very different in texture and character from Braunton Burrows, where the sand is so loose that in windy weather it is all in motion. In the eyes of most Entomologists, Braunton Burrows are looked upon with some amount of veneration as the locality where *Deilephila Euphorbiæ* once did occur, and where it may, therefore, be expected to occur again. The sea spurge grows freely on Northam Burrows, and I have repeatedly sought on it, but to no purpose. Braunton Burrows, which is less conveniently accessible, I once visited, and well remember that the prodigious quantity of larvæ of *Callimorpha Jacobææ*, on the rag-wort, struck me as something perfectly astounding.

A salt marsh near Barnstaple is of interest to me as the locality where I first had the opportunity of collecting the larvæ of *Bucculatrix maritima* and studying their habits. The large dipterous-looking mines which they make in the thick leathery leaves of *Aster tripolium*, and the facility with which the white-ribbed cocoons can be collected, render it an easy matter to obtain a supply of this variable species, the largest yet known in the genus *Bucculatrix*.

To my fancy, one of the pleasantest places in North Devon is Torrington, situated on the summit of a steep hill, close to

the Torridge, the descent to which is almost precipitous; amongst the furze bushes on this steep slope the webs of *Butalis grandipennis* are in the early months of the year very conspicuous. From its elevated position, you get at Torrington a pure thin air, and as the river takes a curve you look along the valley in two directions, besides getting other extensive views.

The Tamar and the Tavy I have never seen, but I gather from what I have heard that the climate of Plymouth is the most rainy in all Devonshire.

On a cold day early in April I paid my first and only visit to the Dart, descending from Totness nearly to Dartmouth in a rowing-boat and returning by the steam-boat. The season was an unusually early one, as many of the oaks had a sprinkling of green leaves; but I can well believe that when the trees are in full leaf the scenery of this river must be very beautiful. The walls of the old castle at Totness were gay with the pure yellow, wild wall-flower, and in the neighbouring thicket the pleasant-looking, but foul-smelling, *Allium ursinum* grew in profusion.

Torquay is one of those places to be revisited again and again; the walk along the cliffs on the northern side of the bay affording a rich treat of varied and extensive views both of land and sea. My last visit in Devonshire was in the neighbourhood of Teignmouth, on the slope of the hill immediately above that town on the road to Dawlish. In one direction the view looked over the Ness on the south side of the mouth of the Teign, and along the coast of Babbacombe Bay; the Orestone lying off the mouth of Torbay, standing out well in the distance; thus embracing fields, woods, cliffs, downs, rocks and sea—certainly a pleasant prospect from one's drawing-room window.

ENTOMOLOGICAL TRAVELS IN NORWAY.

By Dr. Wocke.

[Translated from "Ein Beitrag zur Lepidoptern Fauna Norwegens," by Dr. Wocke, in the Stettin Entomologische Zeitung, 1864, pp. 166—172.]

When returning from Finmark over the Dovrefjeld on the 19th and 20th of August, in company with Dr. Staudinger, a nascent desire arose in me at some future time to devote a summer to collecting on those mountains which promised so abundant a harvest.

In fulfilment of this plan, I left Hamburg on the 24th May, 1862, by the small screw-steamer Falcon; this was unfortunately already rather late, as I afterwards discovered to my sorrow. After a favourable passage I arrived early on the 26th at Christiansand, on the southern extremity of Norway, and made use of the forenoon, that the ship remained in the harbour, for an excursion to the localities already visited on my previous journey. I then pursued my voyage along the south-east coast of the country, and after short stoppages at Arendal and Laurvik I landed on the afternoon of the 27th at Christiania. On the following day I paid an early visit to the botanical garden, then in its gayest spring attire; afterwards I visited my worthy friend Lector Esmark, and ascertained from him the precise locality in which he had once captured *Chionobas Jutta*, an insect I had never seen alive. Finding that his capture had taken place early in June, and the locality was not far from my intended line of

travel, and also considering that the forward season rendered an early appearance of the desiderated species, and the possibility of its capture, not improbable, I resolved to venture on a digression to the locality.

On the 29th I left Christiania, taking the railway to Eidsvold, and then the steamer on the Mjösen to Hamar, a pleasant little town, which is very perceptible from a distance owing to the ruins of its old cathedral, enthroned on the end of a peninsular which projects far into the lake: this cathedral was destroyed by the Swedes in the year 1567. From this point I would willingly have availed myself of the railway recently opened at Elverum; but it chanced to be Ascension-day, and since on this pious railway no trains run on Sunday or Feast-days, I was obliged to continue my journey by carriole, as the idea of waiting till the next day appeared a blameable waste of time, more especially as the weather was splendid, and such weather is not of long continuance in Norway. So I proceeded from Hamar to the village Vang, and past its very ugly new church, in an easterly direction through an undulating country, partly clothed with wood and marsh, and partly well cultivated, for a distance of about eight German miles till in the neighbourhood of Loiten, the church of which place, built on an eminence, is visible for a considerable distance. In the vicinity of Loiten the locality of *Jutta* was to be looked for. About a quarter of a mile from this place I readily found at Sigstadt a most hospitable reception, although it was already past midnight. The next morning I returned to the church of Loiten, and then soon came to a fir-wood to the north of it, and there found a marshy brook and by it a peat moss of inconsiderable extent, the promised locality. I sought here for a long time, but in vain; I took all sorts of things, but not what I was looking for; at last I caught a glimpse of a black buttterfly reeling

unsteadily through the still leafless birch bushes; I catch it and find I have a ♂ of *Erebia Embla*, which I had not expected to find so far south (Loiten is a little to the south of 61° north latitude). I succeeded in catching only four fresh specimens of this scarce insect, and my other captures were only such species as at the same period of the year are also common in Germany, and so I determined to continue my journey on the next day, in order to neglect nothing on the Dovrefjeld, where indeed I was aware there were other marshes in which *Embla* and *Jutta* might also occur.

Unfortunately this expectation was not fulfilled, and I regretted afterwards very much that I had not remained some days longer at Sigstadt. On my return to Hamar I this time patronised the railway, and then proceeded by the steamboat to Lillehammer at the head of the Mjösen. The following day I carrioled through the green and flowery plains of the fruitful Gudbrandsdal to the station Braendhaugen, which is already at a considerable elevation, and the distance about twenty German miles; on the next day, June 2nd, at noon I arrived at last at the Dovrefjeld. I soon settled myself economically at the post-house at Fokstuen, where I remained to the 30th of June; then I removed to Kongsvold, which is five miles further to the north, where I remained up to the 29th July.

The Dovrefjeld forms a vast mountain plateau, extending for miles in all directions, which is only bordered on the south-west by a deeply excavated valley, but on the other sides is connected with other Fjelds. The average height of the Fjeld is from 3,000 to 4,000 feet; its surface shows some rounded ridges, between which are many bogs and small lakes. In the north the mountain appears cleft, rugged precipitous rocks border deep abysses partially filled with perpetual snow, from which well forth the supplies of numerous

small lakes. Near this most desolate part of the Fjeld rises the lofty pyramid of Snehaetten, upwards of 7,000 feet high, covered with perpetual snow and rarely free from clouds. Individual mountains in the south and north-east, such as Blaahoe near Fokstuen, which I frequently visited, and Knudshoe and Nystuhoe near Kongsvold, have an altitude of more than 5,000 feet, but form broad table-lands, often marshy, poorly clothed with vegetation, with occasional groups of broken rocks.

To the north these heights generally fall more abruptly and are here clothed with snow in patches, whilst the southern inclination is less steep and offers no impediment to the ascent. A depression, with only a height of 3,000 feet, goes transversely across the Dovrefjeld from N.E. to S.W., into which the waters from the lateral heights form marshes and tarns, and collect into two streams, one of which runs south-westerly to the Laagen, the other easterly to the Follaelv. One thing which makes a sojourn on the Dovrefjeld extremely pleasant to the naturalist is the post-road which goes across it from Christiania towards Trondhjem, with the station-houses erected for the reception of travellers. This road ascends very steeply from Dombaas, at the head of Gudbrandsdal, in an easterly direction till it attains a height of 3,000 feet; then runs nearly level along the above-mentioned depression, past Fokstuen to the station Jerkind, which is three German miles further, whence it again rises steeply towards the north, attaining its greatest elevation of more than 4,000 feet between Jerkind and the next station, Kongsvold; thence it gradually descends and beyond Kongsvold runs between rocky mountains 5,000 feet high, and is continued along the banks of the foaming Drivelv, which forms continual waterfalls. This valley is the most beautiful in the whole mountain range. The road is sometimes cut out

amongst the over-hanging rocks, sometimes surrounded with bushes and luxuriant meadows. On the right hand many considerable waterfalls start from the rocks of the always snow-capped Knudshoe; one, the fall of the Sprenbekken, is usually a fall of spray, only after heavy torrents of rain fuller.

Beyond Drivstuen, which is distant about a mile and a half from Kongsvold, and which lies considerably lower in the Drivdal, which is here rather broad, one can perceive the northern limits of the Dovrefjeld, although here, as at other places where not bordered by deep valleys, it is connected with other mountain ridges. The rock of the mountain is granite, which in many places passes into gneiss or mica-slate, and varies very considerably.

In respect of vegetation, the foot of the mountain is clothed with firwoods, which, between Dombaas and Fokstuen, attain a height of from 70 to 80 feet; above 2,000 feet they are more stunted, and at the height of 2,500 feet they disappear altogether, giving place to the birch. The latter tree clothes the mountain slopes and valleys (where not prevented by rocks and marshes) to the height of about 4,000 feet. Along with it, as an underwood, occurs the dwarf birch (*Betula nana*), which also grows exuberantly in the marshes in company with numerous Alpine species of willow, and ascends to the height of 4,500 feet, above which elevation only a very limited Flora occurs on the sterile rocks; however, it is distinguished by many scarce northern Alpine plants.

The valleys and ravines often show a very luxuriant vegetation of ferns, *Solidago Virgaurea*, *Aconitum Lycoctonum*, var. flore violaceo, *Saussurea Alpina*, *Polemonium cæruleum*, &c.; in the open places grow *Phaca frigida*, *astragalina* and *oroboides*, *Alchemilla Alpina*, *Cornus Suecica*,

Erigeron Alpinus, *Primula Scotica* and *stricta*, *Gentiana Amarella*, *tenella*, *nivalis;* and on stony slopes grow the delicate yellow *Papaver nudicaule*, *Saxifraga Cotyledon*, and *Artemisia Norvegica* (which unfortunately is fed on by no *Cucullia*).

Of the four post-houses and inns on the Dovrefjeld above named, Jerkind (sometimes written Hjerkind or Hjaerkin) is the most elevated and the best appointed; it contains upwards of twenty apartments for travellers, but, unfortunately for an Entomologist, its situation is the worst. The inns at Kongsvold and Drivstuen rival it in goodness, but the latter of these is no longer in the Alpine region, and harbours therefore a number of insects which do not occur in other parts of the Dovrefjeld. Kongsvold is probably the most conveniently situated mountain station for a naturalist, since here the most fertile meadows, watered rocky ravines, extensive places of bare rock, and lofty Alps decked with snow-fields, are equally near and easily attainable; however, peat-mosses and lakes are wanting.

Fokstuen, which is situated furthest to the south, has lost the least portion of its national primitiveness through the civilising innovations of pleasure-seeking tourists, but furnishes good and cleanly lodging, only the fare is rather monotonous, and one must accustom the stomach to daily meals of milk, fladbrod and venerable cheese, varied only with trout; fresh meat not being attainable till August, when the chase of reindeer and the shooting of ptarmigan is again permitted. Around Fokstuen there are extensive marshes, with many lakes of black-brown peat water, and impenetrable willow thickets, though only from three to four feet high. Fine collecting-ground also occurs here in the fir-wood on the slope towards Dombaas, as also in a narrow valley, oppo-

site the yard, which tends to the south, at the foot of Blaahoe. At Fokstuen, however, the moist meadows and the great masses of bare rock are wanting.

Now, as regards the Lepidoptera which I collected on the Dovrefjeld, the number of species is considerably less than the number of those which I collected along with Staudinger in Finmark, being only 166. The number of butterflies was only 12, just half as many as we had found in Finmark. Of the species which likewise occur there I met with nine, to which must be added *Syrichthus Centaureæ*, which is also indigenous in North America, and the Alpine species *Erebia Euryale* and *Lycæna Pheretes*. Only three of the species were purely northern, the others belonging also to the German Fauna.

Of *Zygænidæ* I found only one species, *Exulans*, which likewise occurs in Finmark and on the Alps. Of *Sesiidæ* I found no imago, but observed an empty pupa skin under birch-bark, which probably belonged to *Culiciformis*. The *Sphingidæ* were wanting. Of the *Hepialidæ*, which in Finmark were unrepresented, two occur on the Dovrefjeld.

I found nine species of *Bombycidæ*, all of which occur likewise in Germany. Of the 24 species of *Noctuidæ*, 12 also occur in Finmark, 8 are exclusively polar, including the two new species and *Anarta Algida*, which had hitherto only been observed in North America; 19 [16?] belong also to the Fauna of Germany and Switzerland, though six of them only occur in the Alpine region. I met with 25 *Geometridæ*, 19 of which occurred likewise in Finmark, and only one, *Eupithecia Hyperboreata*, is exclusively northern, all the others occurring likewise in Germany. The number of Micro-Lepidoptera captured, 95, is only a little under the number met with in Finmark; amongst them are four new species, 1 *Pyralis*, 1 *Tortrix*, and 2 *Tineæ*.

Twelve of the species are purely northern (without counting the solitary *Nepticula*); the remaining 83 also occur in Germany, nine of them in the region of the Alps. The six *Pterophoridæ* belong altogether to the German Fauna, but appear, however, in a somewhat different garb.

Many species which are indicated by Zetterstedt as occurring on the Dovrefjeld I did not meet with, and many others may also occur which have remained undetected. In a single summer, even with the most favourable weather, it is not possible to investigate exhaustively so extensive a mountain region, but here the labours of the collector are rendered much more difficult by the unfavourable climate and the almost constantly bad weather. The first days of June were fine and warm, and during that period the greater part of the large tracts of snow which I had noticed on my first arrival at Fokstuen melted, but from June 4th to the end of the month it rained daily; on the best days the morning hours were fine, but towards 10 o'clock there came up black clouds, which soon poured down rain or hail, and often we had snow, yet the snow on the higher mountains rarely lay long, and hindered my collecting less than the generally very gusty storms. July was even worse, since I could only designate in my journal two days as free from rain. The most favourable times for collecting were those days on which heavy showers and warm sunshine prevailed alternately. Storms hindered me the less here, since I confined myself very much to Drivdale, which is sheltered by high mountains, and to the old road, now going to ruin, between Kongsvold and Drivstuen, Vaarstien, which though carried at a considerable elevation, is also sheltered by high rocks. The higher mountains in July were almost inaccessible, since the daily fresh-fallen snow rendered the ascent dangerous, and, besides, destroyed all insect life. The thermometer

frequently sank in the nights of July below the freezing point, and never rose in the day above 10° Reaumur [55° Fahrenheit]; usually the thermometer stood between 6° and 8° [46°—50° Fahr.]

Notwithstanding this the Lepidoptera were not more sluggish than with us, where the temperature is thrice as great. I also found the *Geometræ Cæsiata, Nobiliaria* and *Munitata* in active flight in the middle of the cold nights and during fine but dense rain. Only the *Anartæ*, which cannot fly without sunshine, were at a disadvantage, and it seems extraordinary that so many species of this genus should occur, and, as appears, in such numbers, since bad summers are here the rule, and there are years when it rains unceasingly for six weeks.

This also would account for the poverty of the district in Diurnal Lepidoptera, and the comparative scarcity of those which do occur, many of which seem not to require bright sunshine for their flight; at any rate I often saw not merely *Syrichthus Centaureæ*, but also *Argynnis Freija*, *Erebia Manto*, and *Lycæna Pheretes*, flying whilst the sky was cloudy.

On my return I took the road along Romsdal, one of the most romantic and wildest valleys in Norway (which leads in a north-westerly course to the sea), to Veblungsnaes, on the Romsdalsfjord, where I tarried two days. Hence I made an excursion on the 31st July to the opposite shore of the Fjord, which presented meadows interrupted with hazel and alder, bushes and slopes clothed with firs and juniper. The 1st of August I made an excursion to Knudsaetern (Herdsman's Cottage) on the Stigfjeld, distant about one and a half German miles. The way thither led through a valley, through which streamed a wild brook, which had recently been flooded in consequence of a waterspout; in this valley

grew many bushes of *Alnus incana*, and here I found many *Geometridæ*, which unfortunately were almost all injured by the torrents of rain of the previous day. Above the Herdsman's Cottage, around which was a luxuriant growth of mountain plants, I clambered up, near the three beautiful falls formed by the Ister springing from the precipitous rocks, to the top of the Fjeld, on the west side of which, between two bare points of rock, lay the blue masses of a glacier. Close to this were beautiful green meadows, which probably earlier in the season might have furnished a rich collecting-ground, like those at the southern side of the Fjeld, which, placed at a greater elevation, were covered with broken rocks.

From Veblungsnaes I proceeded by a small steamboat to Molde, where I transferred myself to the steamer going from Trondhjem to Hamburg, which, after a stoppage of a day and a half at Bergen, brought me, on the 10th of August, back again to Hamburg.

[The special enumeration of the 166 species, with accounts of their habits, peculiar markings, &c., with the descriptions of the six new species, is naturally too lengthy, however interesting, to be introduced here.]

ENTOMOLOGICAL TRAVELS IN NORWAY.

By George Ritter von Frauenfeld.

[Extracted from his "Bericht über eine Reise durch Schweden und Norwegen im Sommer 1863," in the Verhandlungen der k. k. zoologish-botanischen Gesellschaft in Wien, 1863.]

From Trondhjem I resolved to continue my journey by land; I had, however, to wait here for three days for remittances. This time I devoted to excursions and visited the two Leerforss, beautiful and powerful waterfalls of the Nid, in the foaming cataracts of which saw-mills and forges are constructed.

A spherical gall, just in the act of development, which I found on willows, was to me extremely interesting, because in several of them, which already had a diameter of 2—3 millimetres, I found the egg still unhatched, showing that the original formation of the gall was clearly due to the introduction of some inoculatory matter.

A *Psylla* larva, which I had already noticed on the birch-trees at Bodö, was here in extreme profusion on the alders, and was very conspicuous, seeing that the creature, only two millimetres in length, carried on its anus a radiating tuft of a resinous secretion of nearly twice that length, so that the twigs, on which they were closely packed, appeared covered with a blueish-white shaggy substance.

Monday, July 6.—I proceeded on my journey by post. The carriages have two wheels, with a narrow longish seat for one person, and generally with wooden springs. Behind

is a small board, on which the boy or girl who has to take the carriole back has to sit, and the narrow space in front between the feet is all that is left for the disposal of one's baggage, which should, therefore, be reduced to the most moderate dimensions. The traveller is obliged to drive himself, and that is not altogether so pleasant here as in Jemtland, since on this much-visited and well-travelled road the horses are not nearly so good as in that mountain district. The effect produced on tourist routes in all directions by a continual stream of foreigners, especially English people, also makes itself tolerably sensible here, and as the patriarchal simplicity and good humour gradually disappear, they are replaced by selfishness and presumption.

Here and there the neighbourhood is quite romantic; at Wollum the rocks overhanging the road were gaily adorned with the richly-blooming white tufts of *Saxifraga Cotyledon*, often more than a foot in length. At Soknäs I met with cultivated hops. Near Austbjerg and Nystuen the road runs along the top of the mountain, often in deep cuttings of bare rock, having quite a picturesque appearance. At one such place one sees the river 700 feet below covered with foam, yet the roar of it does not reach to the height of the traveller.

Passing Drivstuen and a beautiful waterfall one attains at Kongsvold the Alpine region, where the snow reaches down to the very road. Here *Silene acaulis*, *Papaver nudicaule*, *Dryas*, *Pedicularis*, *Saxifraga*, *Primula*, bloom close by the road; but after passing Kongsvold the way goes over an exposed stony table-land, across which the wind scours incessantly, and all vegetation ceases. From this place, which is the most elevated on the whole journey, the road descends very abruptly to Jerkin, which lies in a beautiful broad Alpine valley.

The strongly-swollen mountain streams, as also the very considerable masses of snow, frustrated my intention of ascending Snöhätten, and I spent the following day in visiting the nearer heights, which were clothed at the base with birch reaching to the knee-timber region, which was here formed of *Juniperus nana*.

Around the inn at Jerkin I collected *Phaca frigida*, *Ranunculus glacialis*, *Pedicularis Oederi* and *flammea*, *Gnaphalium Alpinum*, *Astragalus Alpinus*, *Draba hirta*, *Melandrium apetalum*, which are generally plants of the loftiest granite Alps, but my captures of insects were much less noticeable.

I determined to devote the time which I had gained, by abandoning the idea of visiting Snöhätten, to an excursion through Romsdal to the sea at Molde. I therefore started very early in the morning of Friday, July 10th, left all my luggage at Dombaas, from which place I should have to continue my journey to Christiania, and provided for a three or four days' excursion and hastened onwards. The Romans' Valley is renowned as one of the most beautiful in Norway, and fully justifies its reputation.

From Nystuen, which is the fifth station from Dombaas, to beyond Ormen, a distance of more than a Swedish mile, the Roumen forms one incessant waterfall, to which waterfalls contribute from all sides, and which, broken a thousand times by the giant masses of rocks in its bed, heaps cascade upon cascade and rolls thunderingly along. Frequently nothing can be seen of the strong wild stream, although the opposite bank is quite close, but one hears close by the rush and roar of the torrent, and discovers that the entire mass of water has, bubbling and boiling, worn a way through a fissure of a few fathoms breadth, and reappears lower down lashed to foam. The stream sometimes runs so close to the

road that the rolling waters foam over the bank. Separated frequently for some distance by the masses of rock, the roaring waters rush here and there tumultuously together, so that the waves dash up higher than their fall, or, dashed to a million atoms, are borne through the air like steam.

At Ormen an entire stream rushes from a considerable height into the Roumen, divided by rocks into two neighbouring falls. Here the valley narrows to a slender ravine, which appears to be closed in by a mighty mountain, and in the lowest recesses of which the sun's rays are scarcely able to penetrate. At last, however, the Roumen flows quietly along, like a clear lake of sea-green water, and beside it the road runs under a leafy canopy of alders. The rocks, notwithstanding, become continually higher, more narrow and steeper: often nearly perpendicular, they send down waterstreams everywhere,—a multitude of waterfalls which nature has here brought together in the most wonderful variety.

Digitalis purpurea grew abundantly on the broken rocks, and blackbirds flew sportingly hither and thither. Passing by the foot of the Romanshorn one sees on the left the many-toothed Troldtinderne, whereas the bold picturesque double peak of the former does not come into full view till you reach Veblungsnäs.

At Veblungsnäs, which is pleasantly situated on a tongue of land at the further corner of Moldefjord, I should have had to have waited three days in order to go to Molde. I therefore decided to turn back the same day, and made use of the few hours of my stay there in searching for metamorphoses, of which I found an extremely interesting one, namely, a Dipterous larva, which lived on the underside of the leaves of *Vaccinium*, imbedded in a sticky slime, an appearance which was also new to me.

On getting back to Dombaas, I made an excursion in the

vening on to the nearest hill, where I found *Crepis biennis* nfested with *Trypetæ*.

On Monday, July 13th, I continued my journey to Christiania, through Gudbrandsdal, the valley in which he Laugen runs. The neighbourhood is richly cultivated; leasant farmhouses lie dotted about to a considerable height p the mountain slopes, above which thick woods clothe the igher points, some of which still showed patches of snow.

I arrived at Lillehammer, at the northern end of the Mjösen, at mid-day on the 15th, and was obliged to wait there till the next morning when the steamboat would start for Eidsvold. I went immediately, according to my custom, in search of metamorphoses, and as I wandered through the streets I found two lemmings dead, but evidently quite fresh. During my entire journey I have been seeking information respecting this beast, whose natural history abounds in doubtful and marvellous accounts, and had endeavoured to obtain possession of specimens. All the way up to Alten I was told I could have it in any quantity, but nowhere could I, by the most strenuous efforts, obtain even a single specimen. Everywhere I was told that not long ago it had abounded in all the streets and roads in fabulous numbers, and had been trodden on and destroyed in quantities, but no one could give any information as to what had now become of them, or where any were now to be found. No one had attempted to examine these creatures more closely; all remarked that they were not obtainable alive, and nothing whatever seemed known accurately respecting their sudden appearance and mysteriously rapid disappearance.

As I had now ocular testimony of their actual occurrence at the place, I endeavoured to obtain some, and a boy was found, who, for a remuneration, promised to catch some at a mountain slope, where they were still dwelling in holes,

which they quitted at night, and truly I received that very night two specimens in a cage, one of which died as I approached Christiania, probably for want of water, but the other, which is probably the first living specimen brought so far to the south, is still alive and hearty.

For the first few days, though I tried it with many things, it ate only quite freshly-cut grass and clover; afterwards it ate boiled potatoes, with which I fed it on the whole journey. At present it prefers bread soaked in milk, or other farinaceous food. It was rather singular that from the very first the beast was not savage; it never attempted to bite, though it had powerful teeth, with which it gnawed its wooden cage, and would sit quietly on the hand without attempting to run away. It is a truly nocturnal animal, and even by candle-light seems to see very badly, and this character may probably account for some of the peculiarities which are related of it.

Near Lillehammer I met with *Hypochæris maculata* infested with *Trypeta* larvæ, from which in a few days I bred *Ensina Sonchi*. The scenery of the Mjösen bears quite the same character as Gudbrandsdal, of which it is evidently a continuation; it is not till we reach the railway from Eidsvold to Christiania that we come to hills of a lower aspect. There we had very raw weather with hail and snow, and saw as we travelled along that a sharp frost during the preceding night had cut off the tops of the potatoes.

Whilst at Christiania, which is beautifully situated at the head of the Fjord of the same name, upwards of 20 miles in length, I was under the greatest obligations to Professor Boeck, and made several excursions with his son Axel, whose knowledge of the lower orders of marine fauna is very great.

* * * * * *

During my excursions from this place by land I found a

great many metamorphoses, and amongst them one very remarkable, and perhaps the greatest prize in my whole journey. I found on a completely developed *Cicadellina*, *Typhlocyba* sp., a case attached externally to the second abdominal segment, as large as the abdomen itself and containing a parasite. After this has caused the death of the *Cicadellina*, the case is torn open and a lively larva rushes out, which spins up in the ground. Such an instance, in my whole experience of the metamorphoses and the manners of parasites, I had not hitherto met with.

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NOTES AND OBSERVATIONS ON EUROPEAN BUTTERFLIES.

By W. F. Kirby.

[Supplementary to the Manual of European Butterflies.]

It appears desirable to record the new butterflies and larvæ which are being occasionally discovered on the Continent; and, in addition to these, I have to notice a few species which I formerly ranked as varieties. Several of these are described from specimens recently received by Mr. Doubleday, to whom I am greatly indebted for calling my attention to them as specifically distinct.

Pieris Ergane, Hüb.

Ergane, Hüb., Dup., Staud.
Narcæa, Freyer, Treitschke.
Rapæ, var. Bd., Kirby.

Exp. 1-4 in.—1-6 in.

Differs from *P. Rapæ* in the three black spots of the fore-wings being absent on the underside; the spot on the costa of the hind-wings and the lower spot of the fore-wings are wanting both above and below; the costa of the underside of the hind-wings is never yellowish.

Larva unknown.

Hab. Dalmatia.

Pieris Krueperi, Staud.

Exp. 1-9 in.—2 in.

Mr. Bates, probably on Lederer's authority, has noted this insect as synonymous with *P. Gliciria*, Cramer, (II. 171, E. F.)

COLIAS PALÆNO, Linn.

The larva occurs in August and September.

COLIAS PELIDNE, Bd.

Colias Palæno, var. Kirby.

Exp. 1-8 in.

Very close to *C. Palæno*, but the black discoidal spot of the fore-wings is narrower, and has a white pupil. The spot is less conspicuous or wanting on the underside. The black border of the fore-wings is very regularly dentated by the yellow lines, forming rounded and well-defined cones.

Larva unknown.

Hab. Lapland, North Russia.

COLIAS NASTES, Bd.

Colias Phicomone, var. Kirby.

Exp. 1-5 in.—1-7 in.

♂ greenish-sulphur above; ♀ greenish-white; hind margin spotted with black. Fore-wings with a black discoidal spot. Underside of hind-wings obscure greenish-yellow, thickly powdered with black; discoidal spot silvery.

Larva unknown.

Hab. Lapland.

Very similar to *C. Phicomone*, but smaller and darker.

COLIAS VERDANDI, Zett.

Nastes, var. Staud.

Melinos, Eversm. Staud.

Exp. 1-6 in.—1-8 in.

Uniform dull yellowish-green, not dusted with black like *C. Nastes*, and much lighter coloured than either *C. Phicomone* or *C. Nastes*. Fore-wings with a black border better

defined than in the allied species, within which is a row of oval spots of the ground-colour, bordered within with blackish. Fore-wings with a discoidal lunule. Hind-wings with a row of narrow, oval, black, marginal spots; discoidal spot orange, very inconspicuous. Fringes rosy.

Larva unknown.

Hab. Lapland.

Colias Boothii, Curtis.

Colias Boothii, Curt.; Doubl. and Hew.; H.-S. 39, 40 (not 459, 460), but not of other authors.

Exp. 2 in.

Green; fore-wings suffused with orange from base and inner margin to the large and round discoidal spot. Hind-margin narrowly black, rounded, and cut regularly by the veins in ♂; spotted in ♀. Underside very dark green; inner margin of fore-wings orange, discoidal spot black with a white pupil, that of hind-wings red with one or two white pupils. Fringes rosy. VII.—VIII.

Larva unknown. On *Papilionaceæ*?

Hab. Lapland.

I omitted this species in my Manual, as all the specimens I had then seen were from Arctic America.

By some extraordinary mistake, all the Continental authors have made *C. Hecla* of Lefebvre synonymous with *C. Boothii* of Curtis, though the latter is one of the most conspicuous species of the genus. I am not yet satisfied that there is not another and commoner species confounded with *C. Hecla* on the Continent under the name of *C. Boothii*.

Colias Heldreichi, Staud.

This species is synonymous with *C. Libanotica* of Lederer, which is the oldest name. It is one of the largest and most splendid species in the genus.

Pyrameis (?) Ionia, Kind.

Vanessa Ionia, K., Eversm. Staud.
Apatura Ammonia, Herr.-Sch.
Pyrameis (?) *Ionia*, Kirby.

I have never seen this species, of which there is probably not a specimen in England; but Mr. Bates, judging from Eversmann's figure, tells me that it is not a *Vanessa* or a *Pyrameis*, but a *Junonia*, allied to some African species. The genus *Junonia* is distinguished by the following characters:—

Eyes naked, antennæ slender, fore-wings nearly triangular, emarginate; hind-wings rounded or angular.

It should be placed at the end of the *Vanessides* after *Pyrameis*.

Neptis Aceris, Fab.

The larva feeds, in Java, on a species of *Hedysarum*. I overlooked this remark when describing the larva from the figure in Messrs. Horsfield and Moore's Catalogue.

Cœnonympha Œdipus, Fab.

Larva very similar to that of *C. Pamphilus*, but rather narrower, clear green, with darker dorsal, and yellowish-white lateral streaks. Head and feet olive-green, the latter rather lighter. On *Iris Pseudacorus*. VII.—IX. (Assmuss, Stett. E. Z. 1863.)

Cœnonympha Davus, Haw.

Larva green, with 6 white lines. Pupa suspended by the tail; green, with 3 dusky stripes on each wing-case. On cotton grass, near the roots. V. (J. Chappell, Ent. W. Int. i. 35.)

Cœnonympha Typhon, Haw.

Davus, Fab.

Larva and pupa dark-green, the former with a dark dorsal line (Duncan).

Mr. Doubleday assures me that this insect is the typical *Davus* of Fabricius, and Haworth's *Davus* the *Rothliebii* of the German writers. Still I do not think it worth while to alter the names till the question as to whether we have more than one species in our collections under the name of *Davus* is finally settled. The descriptions of the larvæ and pupæ, given above, certainly appear to differ, but they are so very brief, that it is impossible to say much about them. The information I received from Mr. Marshall as to the habits of *Davus* and *Typhon* is incomplete, as they are by no means *confined* to the localities he specifies. Mr. Birchall has published some interesting notes on *C. Typhon* in Zool. 8727-8 (Sept. 1863).

Chionobas Æno, Bd.

Also, Bd. var.

Semidea, Say = *Also*?

Scudder, in the "Boston Journal of Natural History," gives a very detailed description of the larva of *C. Semidea*, from which I have abridged the following :—

Head brownish-yellow; body pale yellowish-green, more or less tinged with reddish above the dark-green lateral streak; below it, it is grass-green. Dorsal and sub-dorsal streaks black. On *Peltigera canina* (a lichen). VIII.

The perfect insect flies in July and August in the mountains of the north of North America.

Erebia Gorgophone, Bellier.

Ann. Soc. Ent. de France, 1863, p. 419.

Exp. 1-3 in.—1-4 in.

Intermediate between *Gorge* and *Gorgone*, with the latter of which it has hitherto been confounded. Wings rounder than in *Gorge*, fringes plain, uninterrupted with brown. Underside of hind-wings darker, and the marginal bands broader and less defined from the ground-colour. Rather smaller than *Gorgone;* hind-wings with no eyes; fore-wings with only two eyes at the tip, not three; underside paler, the nervures less distinct. VII.

Larva unknown.

Hab. Alpine meadows of the south of France.

Chrysophanus Hypoxanthe, Bd.

Mr. Hewitson has a memorandum that Boisduval has specimens of this insect from Canada. Whether it is really European must at present be considered rather doubtful.

Polyommatus Admetus, Esp.

Lederer states that he has varieties intermediate between this insect and *Rippertii*, *Lefebvrei* and *Menalcas*, all which forms he therefore considers mere varieties of *Admetus*. If so, *P. Hopfferi* is probably also a variety of the latter.

Polyommatus Semiargus, Rottemberg.
Acis, Herbst.

Larva covered with fine yellowish-green hair; dorsal and lateral streaks darker. Head, feet and stigmata dark brown. On *Anthyllis vulneraria*. VIII.—IX. (Assmuss, Stett. Ent. Zeit. 1863).

Additional Note.

Since writing the above, I have received the second number for 1864 of the Ann. de la Soc. Ent. de France, in which

I find a paper on *Colias* by M. Guenée. On the authority of specimens of *Colias Boothii* received from Mr. Doubleday, he affirms the total distinctness of this species from *C. Hecla:* an opinion which I have long advocated, and brought before the notice of Entomologists at every opportunity (*vide ante;* and Man. Eur. Butt. p. 17). He gives *C. Chione* of Curtis as a variety of *C. Boothii,* and cites Herrich-Schäffer, fig. 459, 460, doubtfully, as a variety of *C. Hecla* ♀.

With regard to this figure, I have seen specimens of a *Colias* very like it in the British Museum, which is very rich in polar species of *Colias,* though, unfortunately, this collection has never been properly studied. I therefore think it highly probable that Herrich-Schäffer's insect will eventually prove to be an additional species. To show the total ignorance prevalent on the Continent with regard to *Colias Boothii,* it is only necessary to quote a passage from Wallengren, "Lepidoptera Scandinaviæ–Rhopalocera," p. 140, in which he says, after telling us that Herrich-Schäffer's figs. 39, 40, cannot possibly belong to *C. Boothii* (*Hecla*), "Possibly these remarkable figures belong to *C. Chione,* a species unknown to me."

A SYNONYMIC LIST OF THE BRITISH TRICHOPTERA.

By R. M'Lachlan, F.L.S.

In the course of the few remarks on the British Trichoptera that I had occasion to make in the last "Annual," I mentioned that I hoped, before the end of 1864, to have a monograph of the British species in a forward state. At that time I had even hoped that, before the time mentioned, this work would have been in the printer's hands; but occupations compelling an occasional extended absence from home, and consequent inability to consult materials and books, have rendered it impossible that it shall appear this year. Nevertheless, I am so far advanced, that the greater portion of the MS. is written, and some of the plates in the hands of the engraver. I shall not therefore say anything here concerning the few unrecorded additions to our list, or any other information I may have acquired during the year, reserving all for embodiment in the work. Having been however for several years an annual contributor to this "Year-Book" of Entomology, I am unwilling that the present volume should appear without something from my pen, on my favourite order, and have therefore extracted from the MS. a synonymic Catalogue of 123 species, which are all I can at present enumerate as British. The subject is one of great difficulty, and I fear will always remain so, owing to the impossibility of recognising many of the species described by the earlier investigators of the group, where the types are not extant. Wherever it can be satisfactorily

proved that an older name has been given, no one will be more willing to accept it than myself; for the law of priority must be held inviolate, or we shall get into a state of confusion at once ruinous and inextricable.

Family PHRYGANIDÆ.

Genus PHRYGANEA, *Linn.*

1. grandis, *Linn.*
   atomaria, *Steph.*
2. striata, *Linn.*, *Hag.*
   Beckwithii, *Leach*, *Steph.*
   fulvipes, *Burm.*
3. varia, *Fab.*
   annularis, *Oliv.*
   variegata, *Humm.*
4. minor, *Curt.*
   mixta, *Burm.*
   tortriceana, *Ramb.*

Genus NEURONIA, *Leach.*

1. ruficrus, *Scop.*
   fusca, *Steph.*
   striata, *Burm.*
   chloroneura, *Ramb.*
   analis, *Kolen.*

Genus AGRYPNIA, *Curt.*

1. Pagetana, *Curt.*
   ægrota, *Burm.*
   lævis, *Zett.*
   strigosa, *Ramb.*
2. picta, *Kolen.*

Family LIMNEPHILIDÆ.

Genus COLPOTAULIUS, *Kolen.*

1. incisus, *Curt.*
   striolata, *Ramb.*
   excisus, *Kolen.*
   vulsellus, *Walk.*

Genus GRAMMOTAULIUS, *Kolen.*

1. nitidus, *Müll.*
   lineola, *Schrk.*
   gracilis, *Burm.*
2. atomarius, *Fab.*
   strigosus, *Curt.*
   lineola, *Steph.*
   irrorata, *Zett.*

Genus LIMNEPHILUS, *Leach.*

1. pellucidus, *Oliv.*
   basalis, *Curt.*
   emarginatus, *Curt.*
2. rhombicus, *Linn.*
3. pavidus, *Hag.*
4. flavicornis, *Fab.*
   dorsalis, *Steph.*
5. nobilis, *Kolen.*
6. marmoratus, *Curt.*
   binotatus, *Curt.*
   discoidalis, *Curt.*
   vitrea, *Ramb.*
7. lunatus, *Curt.*
   apicalis, *Curt.*
   nebulosus, *Curt.*
   lunaris, *Pict.*
   affinis, *Steph.*
   vitratus, *Kolen.*, *Hag.*
8. stigma, *Curt.*
   impura, *Ramb.*
   fulva, *Ramb.*
   stigmaticus, *Kolen.*
9. borealis, *Zett.*, *Kolen.*
10. politus, *mihi.*

Genus LIMNEPHILUS—*cont.*

concentricus, *Kolen.*, *M'Lach.*
vibex, *Brauer* ?

11. elegans, *Curt.*
signifer, *Zett.*, *Kolen.*
12. griseus, *Linn.*
fenestralis, *Curt.*
marginalis, *Steph.*
bipunctatus, *Steph.*
obliquus, *Steph.*
signatus, *Steph.*
luniger, *Steph.*
variegata, *Ramb.*
13. bipunctatus, *Curt.*
griseus, *Steph. partim.*
obscura, *Ramb.*
tuberculatus, *Brauer* ?
14. affinis, *Curt.*
costalis, *Steph.*
anastomosis, *Kolen.*
15. auricula, *Curt.*
obscurus, *Curt.*
nigridorsa, *Pict.*
geminus, *Steph.*
signatus, *Steph. partim.*
fenestralis, *Kolen.*
guttata, *Ramb.*
16. vittatus, *Fab.*
consobrinus, *Curt.*
elegans, *Pict.*
notatus, *Steph.*
substrigosus, *Steph.*
bipartitus, *Steph.*
præustus, *Steph.*
flavus, *Kolen.*
17. centralis, *Curt.*
ochraceus, *Curt.*
flava, *Pict.*, *Steph.*
punctatus, *Steph.*

Genus LIMNEPHILUS—*cont.*

elongatus, *Steph.*
fuliginosus, *Steph.*
ustulatus, *Steph.*
nebulosa, *Ramb.*
18. flavescens, *Steph.* (*nec Hag.*)
19. ignavus, *Hag.*
flavescens, *Hag.* (*nec Steph.*)
20. extricatus, *mihi.*
hirsutus, *Kolen.* (*nec Pict.*)
21. hirsutus, *Pict.* (*nec Kolen.*)
22. luridus, *Curt.*
irroratus, *Steph.*
23. sparsus, *Curt.*
tenebricus, *Curt.*
vinculum, *Curt.*
fuscus, *Steph.*
punctatissimus, *Steph.*
fuscatus, *Steph.*
Megerlei, *Kolen.*
24. fumigatus, *Germ.*
fuscicornis, *Ramb.*
cingulatus, *Brauer.*

Genus ANABOLIA, *Steph.*

1. nervosa, *Leach*, *Steph.*
fusca, *Pict.*
lurida, *Steph.*
nigricornis, *Steph.*
destituta, *Hag.*, *Kolen.* ?
2. cœnosa, *Curt.*

Genus STENOPHYLAX, *Kolen.*

1. hieroglyphicus, *Steph.*
vibex, *Steph.* (*nec Curt.*)
striatus, *Kolen.*
2. vibex, *Curt.*
3. striatus, *Pict.*
4. latcralis, *Steph.*

Genus STENOPHYLAX—*cont.*
latipennis, *Steph.*
5. dubius, *Steph.*
6. cingulatus, *Steph.*
7. stellatus, *Curt.*
latipennis, *Curt.*, *M'Lach.*
pantherina, *Pict.*
8. radiatus, *Ramb.*

Genus HALESUS, *Steph.*
1. digitatus, *Schrk.*
radiatus, *Curt.*
hieroglyphicus, *Curt.*
tessellata, *Ramb.*
2. guttatipennis, *M'Lach.* (*n. s.*)
3. annulatus, *Steph.*
testacea, *Steph.*
flavipennis, *Steph.*, *Kolen.* (*nec Piet.*)

Genus ECCLISOPTERYX, *Kolen.*
1. guttulata, *Piet.*
Dalecarlica, *Kolen.*
guttata, *Hag.*

Genus PHACOPTERYX, *Kolen.*
1. brevipennis, *Curt.*
granulata, *Kolen.*

Genus CHÆTOPTERYX, *Steph.*
1. tuberculosa, *Piet.*
villosa, *Steph.*
brevipennis, *Steph.*

Genus APATANIA, *Kolen.*
1. vestita, *Kolen.*

Family SERICOSTOMIDÆ.

Genus SERICOSTOMA, *Lat.*
1. Spencii, *Kirby.*
Latreilli, *Curt.*
collare, *Piet.*
analis, *Steph.*
assimilis, *Steph.*
hyalina, *Steph.*

Genus NOTIDOBIA, *Steph.*
1. ciliaris, *Linn.*
atrata, *Fab.*

Genus GOERA, *Hoffmg.*
1. flavipes, *Curt.*
capillatum, *Piet.*
fuscicorne, *Piet.*
pilosa, *Steph.*
fulvum, *Ramb.*

Genus SILO, *Curt.*
1. pallipes, *Fab.*
picicorne, *Piet.*
nigricorne, *Piet.*
vulgata, *Steph.*
2. fumipennis, *M'Lach.* (*n.s.*)

Genus MORMONIA, *Curt.*
(*Mormonia.*)
1. hirta, *Fab.* ? ?, *Curt.*
gracilicornis, *Curt.*
maculicornis, *Curt.*
nigromaculata, *Steph.*
immaculata, *Steph.*
squamulosum, *Ramb.*
2. irrorata, *Curt.*
minor, *Steph.*

Genus MORMONIA—*cont.*
(*Helictomerus.*)

3. basalis, *Kolen.*
   hirta, *Burm.*

Genus BRACHYCENTRUS, *Curt.*

1. subnubilus, *Curt.*
   concolor, *Steph.*
   costalis, *Steph.*
   tincta, *Zett.*
   vernum, *Ramb.*
   maculata, *Kolen.*

Family HYDROPTILIDÆ.

Genus AGRAYLEA, *Curt.*

1. multipunctata, *Curt.*
   sexpunctata, *Curt.*

Genus HYDROPTILA, *Dalm.*

(Two or more species, but I have not yet arrived at any satisfactory conclusion, either as to the number, or the names and synonymy.)

Family LEPTOCERIDÆ.

Genus ODONTOCERUS, *Leach.*

1. albicornis, *Scop.*
   maculipennis, *Curt.*
   cylindrica, *Pict.*

Genus MOLANNA, *Curt.*

1. angustata, *Curt.*
   nigripalpis, *Steph.*
   plicata, *Ramb.*

Genus LEPTOCERUS, *Leach.*

1. nervosus, *Fab.*
   barbata, *Zett.*
   venosa, *Ramb.*
2. grossus, *Steph.*
   cinereus, *Steph.*, *Hag.* (*nec Curt.*)
   notatus, *Hag.*
3. fulvus, *Ramb.*
   ochraccus, *Kolen.*
4. bimaculatus, *Steph.*
   alboguttatus, *Hag.*
   albimacula, *Ramb.*?
5. annulicornis, *Steph.*
   annulatus, *Hag.* (*nec Steph.*)
6. cinereus, *Curt.*
   aureus, *Steph.* (*nec Pict.*)
   annulatus, *Steph.*
   seminiger, *Steph.*
   bifasciatus, *Kolen.*
7. aterrimus, *Steph.*
   ater, *Steph.*
   caliginosus, *Steph.*
   niger, *Steph. partim*, *Kolen.*
   nigra, *Zett.*
   perfuscus, *Steph.*
8. dissimilis, *Steph.*
   assimilis, *Steph.*
   vetula, *Ramb.*?
   Fennicus, *Kolen.*?
9. albifrons, *Linn.*
   interrupta, *Donov.*, *Steph.*
   bilineatus, *Steph.*
10. bifasciatus, *Oliv.*
    affinis, *Steph.*, *Kolen.*

Genus MYSTACIDES, *Latr.*

1. atra, *Pict.*
2. nigra, *Linn.*, *Pict.*
   azurea, *Zett.*, *Kolen.*

Genus MYSTACIDES—*cont.*

3. quadrifasciata, *Fab.*
   longicornis, *Linn.*?

Genus TRIÆNA (*n. g.*)

1. bicolor, *Curt.*
   rufogriseus, *Steph.*
   ferruginea, *Ramb.*
   tineoides, *Scop.*?
2. conspersa, *Ramb.*
   longicornis, *Steph.*
   rufogriseus, *Kolen.*

Genus SETODES, *Ramb.*

1. ochracea, *Curt.*
   hectus, *Zett.*, *Kolen.*
   obsoleta, *Ramb.*
   pilosa, *Müll.*?
2. intaminata, *M'Lach.* (*n. s.*)
3. lacustris, *Pict.*
   testaceus, *Steph.* (*nec Curt.*)
4. testacea, *Curt.* (*nec Steph.*)
5. reducta, *mihi.*
   bicolor, *Steph.* (*nec Curt.*)
6. tineiformis, *Curt.*
   elongata, *Steph.*
   aspersella, *Ramb.*?
7. interrupta, *Fab.*

Family HYDROPSYCHIDÆ.

Genus HYDROPSYCHE, *Pict.*

1. albipunctata, *Steph.*
   angustata, *Curt.*, *Steph.*, *Pict.*?
   ventralis, *Curt.*?
   lepida, *Hag.* (*nec Pict.*)
2. pellucidula, *Curt.*
   lanceolatus, *Curt.*?

Genus HYDROPSYCHE—*cont.*

   tenuicornis, *Steph.*, *Kolen.*?
   hibernica, *Steph.*?
   maxima, *Brauer.*
3. lanceolata, *Steph.*
   atomaria, *Steph.* (*nec Pict.*)
   guttata, *Steph.*?
   instabilis, *Curt.*?
   Danubii, *Brauer.*?
4. contubernalis, *M'Lach.* (*n. s.*)
5. angustipennis, *Curt.*
   fulvipes, *Curt.*,? *Steph.*
6. opthalmica, *Ramb.*

Genus TINODES, *Leach.*

1. luridus, *Curt.*
   flaviceps, *Steph.*
   xanthoceras, *Steph.*
   pallescens, *Steph.*
   pallipes, *Steph.*
   annulicornis, *Steph.*
   longipennis, *Ramb.*
   flavipes, *Hag.* (*nec Pict.*)
2. pusillus, *Curt.*
3. assimilis, *M'Lach.* (*n. s.*)

Genus PSYCHOMIA, *Latr.*

1. gracilipes, *Curt.*
   latipes, *Curt.*
   annulicornis, *Pict.*,? *Ramb.*
   ciliaris, *Steph.*
   subochracea, *Steph.*
2. phæopa, *Steph.*
   pusilla, *Kolen.*
   derelicta, *M'Lach.*

Genus APHELOCHEIRA, *Steph.*

1. flavomaculata, *Steph.*

Genus PHILOPOTAMUS, *Leach.*

1. scopulorum, *Leach*, *Steph.*
   variegatus, *Steph.*
   montanus, *Steph.*, *Pict.*
   tigrinus, *Brauer.*
2. scoticus, *M'Lach.* (*an præc. var.*?)
3. montanus, *Donov.*?, *Brauer.*
   variegatus, *Ramb.*
   Charpentieri, *Zett.*?

Genus WORMALDIA, *n. g.*

1. occipitalis, *Pict.*
   subaurata, *Steph.*
   longipennis, *Ramb.*
   Ramburii, *Kolen.*
   brevicornis, *Pict.*?
2. subniger, *mihi.*
   columbina, *Hag.* (*nec Pict.*)

Genus PLECTROCNEMIA, *Steph.*

1. conspersa, *Curt.*
   senex, *Pict.*

Genus POLYCENTROPUS, *Curt.*

1. flavomaculatus, *Pict.*
   irroratus, *Curt.*
   pyrrhoceras, *Steph.*
   fuliginosus, *Steph.*
   concinnus, *Steph.*
   trimaculatus, *Steph.* (*nec Curt.*)
   subpunctatus, *Steph. partim.*
2. multiguttatus, *Curt.*? *Hag.*
   irrorata, *Brauer.*
   atomaria, *Kolen.*
3. subnebulosus, *Steph. Cat.*
   multiguttatus, *Steph.*

Genus POLYCENTROPUS—*cont.*

   pyrrhoceras, *Hag.* (*nec Steph.*)
4. picicornis, *Steph.*
   pulchellus, *Steph. partim*, *Hag.*

Genus CYRNUS, *Steph.*

1. trimaculatus, *Curt.*
   pulchellus, *Steph. partim.*
   unipunctatus, *Steph.*
2. flavidus, *M'Lach.*

Genus ECNOMUS, *M'Lach.*

1. tenellus, *Ramb.*
   concinnus, *Hag.* (*nec Steph.*)

Genus NEURECLIPSIS, *M'Lach.*

1. bimaculata, *Linn.*
   Tigurinensis, *Fab.*
   robusta, *Walk.*

Family RHYACOPHILIDÆ.

Genus RHYACOPHILA, *Pict.*

1. dorsalis, *Curt.*
   longipennis, *Curt.*
   vulgaris, *Steph.* (*nec Pict.*)
   stigma, *Steph.*
   opaca, *Steph.*
2. obliterata, *M'Lach.*
3. munda, *M'Lach.*

Genus GLOSSOSOMA, *Curt.*

1. Boltoni, *Curt.*
   vernalis, *Pict.*
2. fimbriata, *Steph.* (*an var. præc. minor.*?)
   obscurus, *Steph.*

Genus AGAPETUS, *Curt.*

1. fuscipes, *Curt.*
   ochripes, *Curt.*
   tomentosa, *Pict.*
   funereus, *Steph.*
   comatus, *Steph.* (*nec Pict.*)
2. comatus, *Pict.*
   laniger, *Steph.*
   ciliatus, *Hag.*

Genus BERÆA, *Steph.*

1. pullata, *Curt.*?
   maurus, *Steph.*
   albipes, *Steph.*?
2. pygmæa, *Steph.*
   maurus, *Curt.*?

Genus CHIMARRHA, *Leach.*

1. marginata, *Linn.*

FOREST HILL,
10*th November*, 1864.

COLEOPTERA.

New British Species, Corrections of Nomenclature, &c., noticed since the publication of the Entomologist's Annual, 1864.

By E. C. Rye.

Taking into consideration the fact, that the discovery of species either new to science or the British lists must necessarily become more difficult every year, and also the comparative scarcity of insect life, owing to the long-continued dry weather during the past summer, it can scarcely be expected that there should be a large number of novelties for me to record. If, however, the quantity added is not much above the average, the quality will perhaps make up the deficiency; several of the insects hereafter mentioned being conspicuous on account of size or unexpected appearance, and two being apparently undescribed.

It will be seen that since the last "Annual," 28 species have been added (including the two new species); and this number is composed as follows:—*Geodephaga*, 1; *Brachelytra*, 14; *Anisotomidæ*, 2; *Necrophaga* and *Lamellicornes*, 5; *Rhynchophora*, 4; *Xylophaga*, 1; and *Halticidæ*, 1. The remaining notices are corroborations of species hitherto possessing only a nominal introduction; changes of nomenclature, &c.

Of the rumoured novelties mentioned in last year's "Annual," I believe the new *Leisti* have resolved themselves into vars. of species already known to us; and the report of *Brachinus sclopeta* has ended in smoke.

Perhaps the most note-worthy capture during the past winter was that of *Trachys nanus* at Mickleham, in profusion. This insect, hitherto exceedingly rare, was found in numbers by Messrs. Douglas and Scott; it was on a bare hill side, and affected certain patches of short grass with apparent indiscrimination. Dr. Power, who subsequently captured great numbers, found in the ensuing summer that upon these parts stunted thistles were then growing.

Early in the spring, *Stenus Kiesenwetteri*, perhaps the grandest of the European *Steni*, was discovered by Mr. D. Sharp in a ravine on Wimbledon Common, which also produced several other rare species; *e. g. Pœderus caligatus* (hitherto all but unique in Mr. Waterhouse's cabinet) and *Tachyporus transversalis* in great quantities, *Myrmedonia collaris*, *Stenus melanarius* and *Chœtocnema confusa*. (I see, with dismay, in a recent number of the "Times," that a proposal made by Lord Spencer to enclose and *drain* this splendid collecting-ground, with the idea of forming a kind of park, is received with favour by the inhabitants of Wimbledon.)

The year, commenced in this promising manner, has terminated with a still more startling "bouquet" of novelties; no less than three new species of *Curculionidæ* (one of them belonging to a genus hitherto not represented in England, though common in France and Germany) having been brought forward "at one fell swoop," on behalf of Mr. Sidebotham of Manchester. This is the more surprising, as the work of the late Mr. Walton on that group has hitherto

been considered very nearly exhaustive as regards our species.

It is to be hoped that this may be productive of further novelties from the midland counties; from which, and indeed from the eastern and western parts of the kingdom, there has long been no increase to our lists adequate to the extent of hunting-ground.

It may indeed be considered that there are large tracts as yet positively untouched; visits are made in the summer months to distant localities, and many good things are captured, but the real resources of a district can only be developed by the constant work of resident Coleopterists.

As far as I am aware, nearly all of the 28 species above mentioned were either determined or taken by metropolitan Entomologists. This is scarcely as it should be. We have no lack of good collecting material in a great many parts of Great Britain (though generally gathered together in the larger towns), but there seems to be a general antipathy to *book work*. It is not to be expected that entomological works are within the reach of all; still the money that is given without a scruple for rare insects would, in most cases, be better expended upon books of reference. Let a few good provincial Coleopterists, in widely separated localities, select each a particular family, obtaining only the standard works relating thereto, and I am persuaded that the Catalogue of British Coleoptera will be rapidly increased.

As a general rule, our chief novelties are supplied from Scotland and the London district, and in the present year we have eight new species from the former (with very many more to come), and nine from the latter. As to the fancied superiority of the London district, I believe there are many other localities quite as good, and several much better; the

facility of changing ground, and the number of workers, are the real causes of good captures being so numerous; still there are several cities and towns enjoying almost equal transit accommodation, and with many resident Entomologists, from whom it is not unreasonable to expect more results if greater efforts were made.

During the past season many tolerably rare insects have been taken in some numbers, in spite of the generally lamented dearth. Messrs. Garneys and Harris have taken a considerable quantity of *Bembidium fluviatile* and *Omias Bohemanni* near Burton-on-Trent, where I also had the satisfaction of capturing the former rarity, and where I also found *Monotoma spinicollis* not uncommon. Dr. Power found *Aphthona hilaris*, *Thyamis parvula*, *Ceuthorhynchideus melanarius* and *Ptinus crenatus* especially abundant near Bungay in Suffolk; and I received large numbers of these species, accompanied by *Chrysomela didymata*, *Chilocorus renipustulatus* and (last, *and* least, but most valuable) *Phyllotreta sinuata*, from Miss Freeman, who found them not far from Eye, in the same county, which seems especially to abound in *Halticidæ;* near Bungay, also, Mr. Garneys formerly took *Teretrias picipes*, *Hydroporus halensis* and *Coccinella* 13-*punctata*.

As far, also, as mere numbers are concerned, the very large quantity of *Cicindela sylvatica* found at Bournemouth, by Dr. Knaggs, is worthy of remark; and at Shirley I found *Lebia chlorocephala*, *Acalles ptinoides*, *Ips ferrugineus*, *Epuræa pusilla*, *Throscus dermestoides*, and two or three species of *Hylastes*, very plentiful. I was also lucky enough to take, at different times, at least a score of *Hylastes cunicularius* in sand pits, under fir trees, at the same place. Mr. E. W. Janson has, I believe, obtained it there from

small twigs of pine; and my friend Mr. G. Lewis once took it under pine bark at Holme Bush. Dr. Power also has found it, under similar conditions, at Mickleham. At the latter place I found *Aphodius Zenkeri* on one or two occasions; once making a "grand haul" of eighteen specimens.

To enumerate even the chief of Dr. Power's captures would, as usual, require more space than can be afforded.

A goodly number of *Ennearthron fronticorne*, a new *Ceuthorhynchideus* (also subsequently taken by Mr. Sidebotham), and *Sphindus dubius*, at one locality (Weybridge), may be considered as pretty good work; to these must be added *Quedius truncicola* (several specimens), *Ceuthorhynchus hispidulus*, *Choleva spadicea*, *Gyrophæna pulchella*, *Euplectus bicolor*, *Gymnetron rostellum*, &c., besides the many others mentioned in this notice. Weybridge has also produced (to Mr. Sharp and myself) *Plagiodera*, *Stenus plantaris*, *Euplectus ambiguus*, *Diacanthus metallicus*, &c.

The fens have not this year been worked quite so much as of late, owing to the absence of Mr. G. R. Crotch, who has been collecting in the Canaries; nevertheless some good things have found their way from thence to London, Messrs. Sharp and Brewer having visited Horning, and respectively captured *Gymnusa brevicollis* and *Dromius longiceps*. Strange to say, *Tachyporus transversalis* occurred here again in profusion, having hitherto been very rare in collections.

Messrs. Sharp and Bishop have visited Rannoch, with results that justify our expectations of very numerous additions to our list, when the north is thoroughly worked, especially in small species.

Four species new to us, and one of them new to science, *Liodes glabra* (not rare), *Quedius lævigatus*, *Q. xanthopus*,

Acanthocinus, *Pissodes*, *Sitones cambricus*, *Ceuthorhynchus viduatus* and *Omalium inflatum* are some of their captures. They also found the type-form of *Xantholinus tricolor* (with base of thorax broadly dark), which I have never seen in the south, though I have often taken the species near Croydon and on the coast (are these latter *X. elegans*?). Mr. Sharp and Mr. Henderson of Glasgow also took the lovely var. *ciliaris* of *Creophilus maxillosus*.

Near Glasgow, Messrs. Somerville, Bishop, &c. have taken several good things, *Dinoderus substriatus*, *Schistoglossa viduata* and *Oxypoda ruficornis* not being the worst. At Paisley, Mr. Morris Young has found *Micropeplus tesserula*, *Mycetoporus nanus*, *Scydmænus exilis*, *Tachyporus ruficollis*, and many other rarities. A little further south, Mr. T. J. Bold (who is so ably reviewing and adding to the Northumberland Coleopterous Fauna) has found "at home" *Stenus atratulus*, *Atomaria fumata*, and both species of *Phytosus*, also the lovely *Telephorus abdominalis*, which Mr. T. Blackburn also took plentifully in the north.

From the Midland counties I have "no advice," except that Mr. Cook, of Manchester, has met with a single example of *Aphodius villosus*. I may here mention that *Stenus Guynemeri*, with its satellite *Quedius auricomus*, has been found in several new localities, at one of which (in Wales) my friend Mr. Garneys also took *Euryporus picipes*.

In the immediate London district *Cœnopsis fissirostris* has been taken by Dr. Power, myself, and Mr. Sharp, in moss (evidently its natural habitat, as eleven specimens were, in all, found) near Croydon. Here also occurred *Mycetoporus lucidus*, *Stenus lustrator*, *Quedius truncicola*, *Thalycra sericea*, *Epuræa* 10-*guttata*, *Anisotoma nigrita*, *Sitones cambricus*, *Smicronyx*, *Trichonyx Märkellii*, &c.

Birch Wood has produced its accustomed *Metallites* in great abundance, on young oaks especially, and *Driophilus pusillus*, also in large quantities, by sweeping in the spring under fir trees.

Darenth appears to have had a comparative rest: I was lucky enough, however, to take *Tropideres niveirostris* at exactly the same place as did Messrs. Douglas and Scott last year. Dr. Power also has taken, in the Wood, *Hypulus* and *Heterothops 4-notatus*.

On the south coast, not far from Dover, *Poöphagus nasturtii*, *Bembidium Sturmii*, *Badister peltatus* and *Anchomenus livens* have been captured, but not recorded; and, near Deal, *Laccophilus variegatus* and *Melanotus niger* were found by Dr. Power, Mr. Sharp and others.

Tachinus flavipes (hitherto found only in one or two collections) has occurred rather plentifully in several places. It was first taken by Mr. Waterhouse, at Bishop's Wood (along with *Rhizophagus perforatus*), in the wet, sappy sawdust round the stumps of felled oaks. Soon afterwards, Mr. E. Shepherd obtained it *in stercore* at Hampstead, and (I believe) near Croydon. It has also been found by Mr. Henderson, under similar conditions, in Scotland.

Odontæus mobilicornis has again appeared, one specimen having been taken by Mr. de Rivaz, near Twickenham. I have not heard of another example (except this) being taken since I recorded the capture of one by myself at Darenth, in the "Intelligencer." Prior to that, one was taken by Mr. S. Stevens, at Birch Wood. Formerly it seems to have been more common.

A splendid example of *Velleius dilatatus* was taken, in the New Forest, by Charles Turner, whilst examining sugared trees, with a lantern, for Lepidoptera; he could, however,

find no more. Mr. Waterhouse has, I believe, already alluded to the way in which Chevrolat found this insect in France; viz., by examining the burrows of *Cossus* larvæ by night. The above-mentioned specimen (which I had the Tantalean pleasure of re-setting) is now in Dr. Power's Collection, thanks to the concession of Dr. Harper.

In the New Forest, Turner also found several of *Phlœotrya* (in solid wood), *Tomoxia*, *Elater elongatulus* and *Leptura aurulenta*. The Longicorns, by the way, must have been less uncommon near Haslemere, in Surrey, than in most other places, judging from the number of specimens and species I found in a box containing some random captures made by Mr. Barrett at that place; amongst them were *Prionus*, *Pachyta octomaculata* and *Callidium violaceum*.

The capture of the extraordinary and most Gyrophenoid *Homalota notha* by Mr. Brewer, near Strood, is especially worthy of remark. Mr. E. Saunders, also, has recorded localities for *Lathrobium pallidum* (for a specimen of which I am much indebted to him), *Harpalus luteicornis* and *Anchomenus gracilipes;* but I believe that the praiseworthy work of cataloguing the Fauna of Reigate has prevented the capture of more good things. The similar occupation of Messrs. Douglas and Scott, upon their descriptions of British Hemiptera, has also hindered those gentlemen from helping our list of novelties; the former, however, found *Byrrhus murinus* in some numbers, at the roots of heath on Plumstead Common.

I have not, in the above remarks, called particular attention to any of the species hereafter mentioned; these will be found in their proper places. Finally, it remains for me to say, that Mr. G. R. Crotch, in answer to my remarks in the last Annual, has brought forward localities, &c. for many of

the species introduced, as new, in his Catalogue. These also will be found in the following notes. From Mr. Crotch's paper in the Zoologist, it would appear as if a further instalment of this most useful information will be forthcoming in time; meanwhile, several of the insects introduced by him are receiving corroboration as to their British claims by being captured and recorded by other Coleopterists.

1. Dromius oblitus, Boield.; G. R. Crotch, Cat. Brit. Col.; id. Zool. 8999 (1864).

Mr. Crotch states that this is the variety of *D. sigma* mentioned by Dawson as being found in the Isle of Wight, and that it is described by De Boieldieu as from the Pyrenees, and is regarded by Dr. Schaum as a variety of *D. nigriventris*, Thoms. (*fasciatus*, Gyll.), which Mr. Crotch thinks is very probably the case. He also says it has no connection with the true *D. sigma*.

2. Stenolophus brunnipes, Sturm, Deuts. Ins. vi. 88, 12, tb. 151, f. *b. B* (*Trechus*); Erichson, Col. March. 62, 5; Schaum, in Er. Ins. Deuts. i. 620, 8; D. Sharp, The Entomologist's Monthly Magazine, 1864, vol. i., p. 48.

Mr. Sharp has recorded the capture by himself in the beginning of May, 1864, in the neighbourhood of London, of an example of a species of *Stenolophus*, which answers very well to the description of *S. brunnipes*, Sturm, and also agrees with specimens of that insect in the collection of the British Museum sent by Herr Dohrn. According to description, *S. brunnipes* is about the size of *S. dorsalis;* black, with the basal joint of the antennæ, the legs, and the reflexed

margin of the elytra, testaceous; the thorax is broader in proportion to the width of the elytra, not so much narrowed behind, the posterior angles more rounded, and the basal foveæ more punctured; the elytra also are rather larger than in *S. dorsalis*.

I have examined the specimen above mentioned, and decidedly agree with Mr. Sharp in referring it to *S. brunnipes*, Sturm, as it exhibits all the above-mentioned characters; and, if we are right in so doing (which I see no reason to doubt), there is an excuse for at least suspecting that *brunnipes* and *dorsalis* are not specifically distinct.

The obstacle of colour is removed by the existence of dark specimens of *dorsalis* from very nearly the same locality as Mr. Sharp's, and there then remains the difference of the thorax to account for, as the *slight* variation in length of the elytra cannot (even if always present, or if not partially an optical deception, owing to the difference of colour) be considered a sufficient specific character. The thorax in Mr. Sharp's insect seems broader than in ordinary *dorsalis*, chiefly owing to its not being so much narrowed behind; but I possess an example, identical in colour and other respects with it, in which the thorax is narrowed behind, as in *dorsalis*. My specimen (given me by Mr. H. Montague) is similar to that sent to Dr. Schaum as the *S. derelictus* of Dawson, and returned as *dorsalis*, dark var. The punctuation of the foveæ at the base varies in *S. dorsalis*, and would certainly appear stronger on a dark thorax than on a light one.

As regards *S. derelictus*, I may add that the Rev. J. F. Dawson has promised to let me examine his type, which (as mentioned by me in a former Annual) he avers to be different from any *soi-disant* exponents of his species.

There would appear to be some grounds for suspicion about *S. brunnipes*, as Dr. Schaum (*loc. cit.*), after his description, adds a note that he cannot allow Erichson's diagnosis as to the hinder angles of the thorax being somewhat blunter, and more rounded, and the elytra longer, than in *S. dorsalis*.

3. COLYMBETES (*Ilybius*) SEX-DENTATUS, Schiodte; G. R. Crotch, Cat. Brit. Col.; id. Zool. 8999 (1864); F. Archer, Jun., Zool. 8973 (1864).

Mr. Crotch states this insect has been hitherto confounded with *C. obscurus*, Marsh., from which, and from all other members of the genus, it is at once distinguished by the dentate claws of the intermediate tarsi of the male.

Mr. Crotch has obtained numerous specimens at Cambridge, and found others in several collections.

Mr. Archer records the capture of one specimen (named, as he informs me, by Mr. Crotch) in a brook running to the shore at Little Brighton, near Liverpool.

4. AGABUS SEXUALIS, Reiche; G. R. Crotch, Cat. Brit. Col.; id. Zool. 8999 (1864).

"Peterhead, Aberdeen." Mr. Crotch, in addition to this locality, states that he is informed by Dr. Schaum that this is a variety of *A. Solieri*, Aubé, a species abundant in Iceland.

5. AUTALIA PUNCTICOLLIS, Sharp, Proc. Ent. Soc. Lond. 3 Oct. 1864, Zool. 9335 (1864), *described*.

Taken by Mr. D. Sharp last August at Rannoch, Perthshire; there is also a specimen in Mr. Janson's Collection, taken some years since in Scotland by the late H. Squire.

With the facies of *A. rivularis*, but the size of *A. im-*

pressa; from the former of which it differs by having its prothorax more evidently punctured, with the central channel only perceptible anteriorly; the lateral foveæ, also, are not so deeply impressed, and those at the base of the elytra are shorter. Apex of the abdomen concolorous. From *A. impressa* it may be readily distinguished by its black colour and evidently punctured abdomen.

6. Leptusa analis, Gyll. Ins. Suec. ii. 388, 11 (*Aleochara*); Erichs. Gen. et Spec. Staph. 154, 29 (*Oxypoda*); Kraatz, Ins. Deut. ii. 62, 2; Thoms. Skand. Col. ii. 275, 1; E. W. Janson, Proc. Ent. Soc. 5 Sept. 1864, Zool. 9267 (1864).

Taken last August in the Black Forest, Perthshire, by Mr. D. Sharp; who, I believe, also simultaneously determined it as *L. analis*.

It differs from *L. fumida* in its superior size, reddish-brown colour, semi-opaque surface, and more strongly and coarsely punctate abdomen. The antennæ are especially of a clearer red colour, and the thorax larger and more quadrate.

In the male, moreover, the fifth and sixth segments of the abdomen above have each a thin, long, mesial ridge; that on the fifth segment extending backwards from near the apical margin for three-fourths of the length of the segment. Each of these thin ridges is represented by a very minute tubercle in *L. fumida*.

7. Euryusa sinuata, Erichs. Col. March. i. 372, 1; id. Gen. et Spec. Staph. 199, 1, tab. 1, f. 2; Kraatz, Ins. Deut. ii. 73, 1; E. W. Janson, Proc. Ent. Soc. 5 Sept. 1864, Zool. 9267 (1864).

A single specimen was captured by the Rev. A. Matthews, many years since, in Oxfordshire.

Allied to *E. laticollis*, but may be distinguished from that species by its short thorax, in which the posterior angles are nearly rectangular, and the hinder margin is slightly bisinuate.

8. ALEOCHARA FUMATA, Erichs., Col. March. i. 357, 6; id. Gen. et Spec. Staph. 166, 15; Kraatz, Ins. Deut. ii. 93, 11; G. R. Waterhouse, Proc. Ent. Soc. 7 Mar. 1864, Zool. 9011 (1864).

Found in Scotland by Mr. Morris Young, and also by Mr. Waterhouse.

It appears to be of the same build as *A. brevipennis*, but much smaller, black, with the sides of the thorax, and the elytra, pitchy; the thorax also is rather convex, and much more rounded at the sides, and the elytra less densely punctured, and rather shorter.

9. ALEOCHARA PROCERA, Erichs., Gen. et Spec. Staph. 61, 4 (*Ocalea*); Kraatz, Ins. Deut. ii. 97, 17; G. R. Waterhouse, Proc. Ent. Soc. 7 Mar. 1864, Zool. 9010 (1864).

Found at Reigate by Mr. Linnell.

Pitchy, thorax and elytra rufo-piceous, or reddish; the thorax with a slight transverse impression at the base. The legs in this insect are very long; and, as may be imagined from Erichson's locating it in *Ocalea*, it presents a great resemblance to the species of that genus. It resembles *A. spadicea*, but is larger, with the head more rounded, the thorax a little shorter, and impressed at the base, with the anterior angles more rounded, and the segments of the abdomen more thickly punctured at the base.

10. Aleochara spadicea, Erichs., Col. Marc. i. 300, 3; id. Gen. et Spec. Staph. 61, 3 (*Ocalea*); Kraatz, Ins. Deut. ii. 98, 18; E. W. Janson, Proc. Ent. Soc. 5 Sept. 1864, Zool. 9267 (1864).

Taken by Mr. J. A. Brewer, in Cumberland, in the autumn of 1863, and communicated by Mr. E. W. Janson to Dr. Kraatz, who returned it labelled "Ab *Aleochara spadicea* vix distincta."

Mr. Janson remarks that it appears to him not improbable that *A. procera* will ultimately prove to have been founded on large dark individuals of this species; the specimen above mentioned presenting, in its superior size, piceous elytra, and foveolated prothorax, several of the characters assigned to *A. procera*.

11. Aleochara sanguinea (Kirby), Stephens; Wat. Cat.
brunneipennis, Kraatz.
mœrens, Thomson.

Mr. Waterhouse (Proc. Ent. Soc. 7 Mar. 1864, Zool. 9011, 1864), has called attention to the above synonymy. He has identified Thomson's species both by description, and by comparison with a specimen received from that author by Mr. Crotch.

12. Homalota notha, Erichs., Gen. et Spec. Staph. 126, 101; Kraatz, Ins. Deut. ii. 323, 127; E. W. Janson, Proc. Ent. Soc. 5 Sept. 1864, Zool. 9268 (1864).

"Captured by Mr. J. A. Brewer, beneath rejectamenta of the River Medway."

The first example of this species taken by Mr. Brewer was submitted by him to Mr. G. R. Waterhouse, who named it "*Homalota notha*;" under which name, I believe, it came

into Mr. Janson's possession. Mr. Brewer has since taken a few more specimens, which are now in the collections of Mr. Waterhouse, Dr. Power, and myself.

As Mr. Janson (loc. cit.) remarks, the extraordinary resemblance which this species bears to the members of the genus *Gyrophæna*, has misled more than one author as to its true affinities. It may be known from any *Gyrophæna* by its labium being bifid, instead of entire; its labial palpi having three joints instead of two; and by the basal joint of its hinder tarsi not being elongate.

It is short, rotundate, black, shining, with the legs and base of the antennæ reddish. The thorax is short and convex, and the sides of the abdomen are rounded.

There appears to be a brown variety, in which only the head and apex of abdomen are black.

13. Oligota pygmæa, Kraatz, in Berl. Ent. Zeits. 1858, p. 352; G. R. Waterhouse, Ent. M. Mag. vol. i. p. 138.

Of the same narrow linear form as *O. pusillima*, which it scarcely equals in size, and from which it may be known by its brown elytra and the bright yellow terminal segments of its abdomen. The three apical joints of the antennæ are broad. It differs from *O. atomaria*, amongst other things, in having entirely pale legs.

Taken in a refuse heap on Shirley Common, near Croydon, during last September, by Mr. D. Sharp and Mr. E. Shepherd.

14. Tachinus proximus, Kraatz, Stett. Ent. Zeit. xvi. 25; id., Ins. Deut. ii. 401, 2; D. Sharp, Proc. Ent. Soc. 3 Oct. 1864, Zool. 9335 (1864).

Found by Mr. D. Sharp in sheep's dung at Rannoch, and

about half a dozen specimens, under the same circumstances, on Ben Lomond, during last August.

It resembles *T. humeralis* rather closely, but the following characters are pointed out by Kraatz, as distinguishing it from that species. It is, as a rule, somewhat smaller; the hinder margin of the thorax is scarcely perceptibly bordered with lighter brown colour; the elytra have (with the exception of a more or less conspicuous triangular mark about the scutellum) a *dark* brown tone, and the punctuation is finer and somewhat obsolete. The antennæ, moreover, are a little shorter, the second and third joints usually blackish on the upper side. Besides these, Mr. Sharp remarks, that the elytra appear constantly to be shorter in *T. proximus*.

As is the case in all members of the genus *Tachinus*, the sexual characters afford good diagnostic assistance.

In this respect *T. proximus*, compared with *T. humeralis*, exhibits the following differences.

In the male, the sub-apical segment of the abdomen has a *scarcely perceptible* emargination at the extremity of the produced middle plate on the upper side, so that, instead of two small middle teeth, there is merely a slightly projecting middle plate, rather in the shape of a truncate cone, with its small end not quite straight; and on the underside the two lateral prominences are not quite so long and less curved upwards: the fifth segment also, beneath, has its wide central notch rather less deep.

In the female, the sub-apical segment above has the two lateral teeth more developed, and the middle plate is broad for the greater part of its length, but ends in a narrow, rather long point, which slightly projects at its apex beyond the lateral teeth. Beneath, the two little prominences (set with short bristles) in the middle are rather more developed, the central rounded emargination being a little deeper.

15. TACHINUS PALLIPES, Grav., Mon. 20, 38 (*Tachyporus*) Kraatz, Ins. Deut. ii. 407, 8; D. Sharp, Ent. M. Mag. vol. i. p. 168.
humeralis, var. I. Grav.
humeralis, var. *a*, Gyll.

Mr. Sharp records the capture of a *Tachinus* by himself at Edinburgh, and which he refers to the above species, though with some hesitation, chiefly on account of the elytra being longer than the description warrants.

It appears to resemble *T. rufipes* very closely, but to have paler legs, and the margins of the thorax yellow.

In the male the upper plate of the seventh abdominal segment ends in four not very acute teeth, the middle pair being most prominent; the triangular notch which separates them not extending so far as the termination of the external teeth. In the female the corresponding plate ends in four long sharp teeth, the central ones being a very little the longer, and the notch between them reaches very nearly to the point where the outer pair commence getting narrower. The underplate ends in six teeth, the external ones being the shortest and the central ones the longest. The notch between these last is broad and not plain at the base, but containing a short broad triangular tooth.

16. STENUS LONGITARSIS, Thomson, Skand. Col. ii. 213, 214; E. C. Rye, Entom. M. Mag. vol. i. 37.

Closely allied to *S. ater*, Mann., from which it differs as follows:—It is smaller, the head is narrower and more deeply excavated; the palpi have the first joint, and the extreme base only of the second joint, light in colour; the thorax is shorter; the elytra are longer and more convex (especially behind), and with the interstices rather more shining.

In the male, the hinder tibiæ do not possess the tooth-like elevation on the inner side, and the sixth segment of the abdomen beneath is not polished, the tubercles to be seen in the corresponding part of *S. ater* being wanting; the depression on the fifth segment is not nearly so broad, deep or polished, the elevated ridges at the apex being much less developed; the depression on the fourth segment is narrower (especially behind), but more defined and polished, and there are no long yellow hairs on the ridges of this or the fifth segment; there is also only a very small smooth depression in the middle of the margin of the third segment. The metasternum is depressed, more closely and finely punctured than in *S. ater*.

Taken by myself some years ago in a wet, marshy place on Wimbledon Common; also in the same locality by Mr. E. Shepherd, Mr. Sharp and Dr. Power, and by Mr. Sharp at Hampstead.

17. Stenus Rogeri, Kraatz, Ins. Deutsch. ii. 793, 66; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. 60.
providus, Wat. Cat. (nec Erichson.)

The insect hitherto known in England as *S. providus* must be referred to this species. It is smaller, more shining and more coarsely punctured than *S. speculator*, and has shorter elytra; the coxæ also are pitchy, and the trochanters fusco-testaceous. In the male, the abdomen is adorned beneath with two rows of yellow curls, turned inwards.

I am not aware of the existence, as British, of the true *S. providus*, which, from Erichson's description, appears to be a dull insect, with the elytra as long as in *speculator*, from which it differs in having the head less hollowed, the thorax more distinctly channelled, the antennæ black, the apical

joint of the palpi and the legs darker, and the coxæ and trochanters *black*. In the male, the abdominal characters appear to be much the same as in *S. Rogeri*.

18. STENUS SCRUTATOR, Erichson, Gen. et Spec. Staph. 708, 33; G. R. Crotch, Cat. Brit. Col.; E. G. Rye, Ent. M. Mag. vol. i. 61.

Closely allied to *S. speculator*, but rather smaller, the palpi with the second and third joints pitchy, except at the base, the legs pitchy, the femora pitchy-testaceous from the base to beyond the middle, and the elytra longer. The metasternum is not hairy, and the male characters differ somewhat, the fifth segment in *scrutator* having a wide polished depression in the middle, terminating in a wide emargination, on each side of which is an elevated ridge, ending in a somewhat prominent tooth. Superficially, this species much resembles *S. lustrator*, but with longer elytra.

Two specimens were taken in Richmond Park, Surrey, in May, 1857, by Mr. E. Shepherd, named by Mr. E. W. Janson, and confirmed by Dr. Kraatz.

19. STENUS SYLVESTER, Erichs., loc. cit. 34; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. 61.

Allied to *speculator*, but much smaller, the last joint of the palpi fuscous, and the legs pitchy-testaceous, with the tips of the femora and the tarsi pitchy. The male characters also differ, the fifth segment of the abdomen beneath having a wide, central, very polished depression, which is also exhibited in a lesser degree on the fourth, third and second segments.

A single specimen, "from Northumberland," named by

Mr. E. W. Janson and confirmed by Dr. Kraatz, is in the collection of the former gentleman.

20. Stenus debilis, Dietrichsen (in litt.?)?; E. C. Rye, Entom. M. Mag. vol. i. 42 (descr.).
opacus, Wat. Cat.

Mr. E. W. Janson has informed me that a specimen of the insect taken by Messrs. Crotch and Matthews, and referred by them to *S. opacus*, has been returned to him by Dr. Kraatz with the following remarks—"*Steno debili, Dietr.* (*in litt.?*) *proximus; verisimiliter eadem species;*" also that Dr. Kraatz seemed doubtful whether a description had been published.

This insect resembles *S. buphthalmus*, but may be distinguished from that species by its flat, dull appearance, and very closely punctured abdomen.

The original British specimens, in Mr. Waterhouse's cabinet, are supposed to be from Northumberland; the species has also been taken at Horning Fen, Norfolk, by Messrs. Crotch, Matthews, Brewer and Sharp, the former of whom has also found it at Wicken Fen. It has been taken at Repton by Dr. Hewgill, Mr. W. Garneys and myself; and at Halliford, by Mr. de Rivaz.

All the specimens I have seen accord very closely with Erichson's description of *S. opacus;* and it is only on the express authority of Dr. Kraatz's communication that I have brought forward the species as probably *S. debilis.*

I cannot understand how such close observers as Kraatz and Thomson can pronounce *S. opacus*, Er., to be merely a synonym of *S. carbonarius*, Gyll. It is true that the descriptions of *S. carbonarius* given by both the first-mentioned authors accord with Erichson's *opacus* (and, by the way,

agree well enough with the insect returned as probably *debilis*); but, on referring to Gyllenhal's original description of *carbonarius* (Ins. Suec. iv. 505, 13—14), I find that species to be of the size, and almost of the oblong form, of *S. fuscipes*, its thorax being described as oblong, *much* longer than broad, with a fovea on each side. Erichson's *opacus*, on the contrary (Gen. et Spec. Staph. 705, 28), is described as of the build of *latifrons*, sub-depressed, with its thorax *not* longer than its greatest width, very little convex, and with no foveæ.

21. STENUS NANUS, Steph., Ill. Mand. v. 301, 59, 1832 (*and Coll.*); E. C. Rye, Ent. M. Mag. vol. i. p. 64. *declaratus*, Er., 1839; Wat. Cat.

As Stephens' description is perfectly good (and is, moreover, corroborated by the representative of the species in his cabinet), there can be no doubt that Erichson's name must be suppressed, being seven years later in date of publication.

22. STENUS PUMILIO, Erichson; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. p. 64.

Mr. Crotch has included this species in his Catalogue, on the authority of Mr. Hogan's record in Zool. p. 4340 (1854), "*Stenus pumilio*, Er.; common"—in a list of Coleoptera taken near Dublin. Dr. E. Perceval Wright has examined (with Erichson's work) the eight or nine specimens representing this species in the Royal Dublin Soc. Mus., from Mr. Hogan's Collection, and finds that none of them answer the description of *S. pumilio*, Er. I have also communicated with Mr. Hogan, but he is unable to find any further specimens, and believes he must have inserted the species on the authority of Mr. A. H. Haliday.

23. Stenus nigritulus, Gyll., Ins. Suec. iv. 502, 10—11 (*nec Erichson*); Thomson; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. p. 87.
unicolor (Kirby) Stephens; Wat. Cat.
campestris, Erichson.

The only wonder connected with this change is that Gyllenhal's admirable description should for so long a time have been misconstrued, and by such a man as Erichson.

24. Stenus crassus (Kirby), Stephens, Ill. Mand. v. 287, 18 (1832), *and coll.*; E. C. Rye, Ent. M. Mag. vol. i. p. 86.
crassiventris, Thomson (1857), G. R. Crotch, Cat. Brit. Col.
nigritulus, Er., Wat. Cat. (*nec Gyll.*)

As the *nigritulus* of Gyll. is now found to be distinct from that of Erichson, a new name for the latter is required; and Stephens' *crassus*, being long anterior to Thomson's *crassiventris*, must stand. His description is good, and corroborated by type in his collection.

25. Stenus littoralis, Thomson, Skand. Col. ii. 226, 30; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. p. 86.

I see no reason to alter my opinion that this insect is not specifically distinct from *S. crassus* (*nigritulus*, Er.)

26. Stenus bifoveolatus, Gyll., Ins. Suec. iv. 500, 9—10 (*nec Erichson*); Thomson; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. p. 89.
nitidus (Kirby), Stephens; Wat. Cat.
plancus, Erichson.

The same remarks apply to this as to No. 23.

27. STENUS BREVICOLLIS, Thomson, Öfv. af Vet. Ac. Förh. (1857), 231, 40; id., Skand. Col.; G. R. Crotch, Cat. Brit. Col.; E. C. Rye, Ent. M. Mag. vol. i. p. 89.
foveicollis, Kraatz, Ins. Deut. (1858).
bifoveolatus, Er.; Wat. Cat. (*nec Gyll.*)

A change rendered necessary by the discovery of the identity of Gyllenhal's *bifoveolatus*.

28. STENUS ERICHSONI (Janson, M.SS.), E. C. Rye, Ent. M. Mag. vol. i. p. 108.
flavipes, Erichs. (*nec Stephens*).

As the name *flavipes* had been given to another species in the genus before the description of Erichson's insect of the same name was published, the above change has been made.

29. STENUS FLAVIPES (Kirby), Stephens, Ill. Mand. v. 289, 24 (1832), and Coll. (*nec Erichson*); E. C. Rye, Ent. M. Mag. vol. i. p. 109.
filum, Erichson (1840).

Stephens' name must stand; his description is good, and his type correctly named.

30. STENUS KIESENWETTERI, Rosenhauer, Die Thiere Andalus., p. 76; Kraatz, Ins. Deutschl. ii. 793, 66; D. Sharp, Proc. Ent. Soc. 4 April 1864, Zool. 9081 (1864); E. C. Rye, Ent. M. Mag. vol. i. pp. 7 (fig.), 109.

Rather like *S. cicindeloides*, but with spotted elytra; it is also more convex; the head is wider, the thorax wider in the middle, and more contracted behind, with the punctuation not quite so close; the elytra are smaller, and, with the

transverse furrows of the abdomen, not so closely punctured.

Discovered by Mr. D. Sharp in the early part of 1864, in a ravine on Wimbledon Common, the bottom of which was very wet, and overgrown with *Sphagnum:* subsequently taken at the same place by myself, Dr. Power, Messrs. C. and F. Waterhouse, Smith, Janson and others.

31. Oxytelus speculifrons, Kraatz, Ins. Deutsch. ii. 862 (note); E. C. Rye, Entom. M. Mag. vol. i. pp. 21, 47.

About the size of *O. depressus*, Grav., and of somewhat similar appearance, but differing from that species as follows:—the basal joints of the antennæ are stouter; the head is not so dull, and has two polished elevations at the base of the antennæ, the space between which, including the clypeus, is more or less polished; there is also a small longitudinal fovea at the base of the vertex. The thorax is not quite so deep, with a more decided dorsal channel (the elevated lines on each side of which are bright, as also are the outer parallel lines), and the depressions on the sides more conspicuous. The elytra are lighter in colour, and not so dull, being very delicately and closely strigose longitudinally (in fact, almost alutaceous), with a few scattered and faint punctures; they are moreover pitchy-brown, with the sutural space somewhat broadly rufo-testaceous and shining. The abdomen is shining black, finely alutaceous. The legs are entirely pale testaceous.

The male is rather brighter than the female, with the antennæ (especially the apical joint) stouter; the sixth segment of the abdomen beneath is produced in the middle of the hinder margin into a slight triangular point, behind which is a semi-circular ridge, the two points whereof are slightly reflexed near the apical margin.

O. speculifrons differs from *O. nitidulus*, Grav. (which it resembles considerably in colour), in being smaller, with the head and thorax duller, and longitudinally strigose, instead of coarsely punctured; the punctuation of the elytra, moreover, is coarser, and only sub-strigose in the latter species.

Taken by myself on the Thames Bank at Hammersmith, and at Shirley, near Croydon; also by Mr. D. Sharp at the latter place, and by Dr. J. A. Power at Mickleham.

32. TROGOPHLŒUS HALOPHILUS, v. Kiesenw., Stett. Ent. Zeit. v. 373; Kraatz, Ins. Deuts. ii. 877, 9; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864).

Found by Mr. Crotch in salt marshes at Weston, in some numbers, and distributed in most metropolitan collections.

This species is $\frac{3}{4}$ lin. long, black, the antennæ concolorous and legs pitchy; the thorax is transverse, subcordate, and has no dorsal grooves.

33. LESTEVA MONTICOLA, Kies., Stett. Ent. Zeit. viii. 77; Kraatz, Ins. Deuts. ii. 933, 3; D. Sharp, Proc. Ent. Soc. 3 Oct. 1864, Zool. 9335 (1864).

One specimen of this insect was taken last August by Mr. Sharp at Rannoch, and another in the Isle of Arran. There appears to be a third in Mr. Janson's Collection, taken on the Cheviots.

It is of the same size as *L. bicolor*, but in build more like *L. pubescens*. From *bicolor* it may be known by the punctuation of the thorax being somewhat more remote and stronger, and of the elytra rather finer. The thorax also is somewhat narrower and longer, with the hinder angles less acute; and the pubescence of the elytra is longer and thicker.

34. Choleva colonöides, Kraatz, Stett. Ent. Zeit. xii. 169, 35; Murray, Mon. of Gen. *Catops*, p. 77, sp. 55, fig. 48; J. A. Power, Zool. 8997 (1864), *Catops*.

One specimen was taken, at the end of March, 1861, by Dr. Power, at the Holt Forest, Hampshire, from the débris of fern, in an old hovel.

The gradual and slight thickening of the club of its antennæ will distinguish this insect from any species of *Colon*, to several of which it bears a great superficial resemblance.

From its ally, *Choleva sericea*, it may be known by its being smaller, with the elytra not truncate, and the transverse wrinkling stronger; the antennæ, also, are finer, and much less distinctly clubbed.

It also somewhat resembles *C. anisotomoides*, but differs from that species in having the antennæ dark at the apex, the body contracted behind from the shoulders, and the elytra transversely strigose.

35. Hydnobius Perrisii, Fairmaire, Ann. de la Soc. Ent. de France, 1855, Bull. p. lxxv.; E. C. Rye, Zool. 8921 (1864); C. O. Waterhouse, Ent. M. Mag. vol. i. p. 139.

I detected a male and two females of this species among some undetermined *Anisotomidæ* in the British Collection of the Rev. H. Clark; and Mr. C. Waterhouse has subsequently found another among some old British Coleoptera belonging to his father, believed to have come from Scotland.

The large size, short antennæ and extremely coarse punctuation of this insect at once distinguish it from its allies, though it is at first sight not unlike a very fine specimen of *Anisotoma furva*, from which its five-jointed hinder tarsi remove it generically.

It is about two lines in length; reddish-brown, shining,

obese and rather stout. The antennæ are very short, testaceous, with the club pitchy-black. The head and thorax are very strongly and rather closely, and the elytra rather closely and very deeply and coarsely, punctured; the sutural space is dark, and the suture itself blackish.

It may be known from *H. punctatissimus*, it largest congener, by being much larger, broader, flatter, lighter in colour and more deeply punctured; also by the seventh joint of the antennæ being pitchy black, instead of rufo-testaceous.

36. HYDNOBIUS PUNCTATUS, Schmidt, Germ. Zeits. iii. 196, 2; Er., Ins. Deuts. iii. 48, 2; Thoms., Skand. Col. ii. 27, 1; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch says he has about eight specimens of this and the next species, collected in North Wales, Liverpool and Scotland, and has seen others in two or three Collections; also that he has sent his series to M. Thomson for his verdict on the subject, as the two species seem to be closely allied.

There are two specimens of *H. punctatus* (I believe) in Dr. Power's Collection; and Mr. F. Archer, jun., has recorded the capture of a specimen, in the month of September, by sweeping, close to Hightoun, near Liverpool (Zool. 8973, 1864).

From Thomson's description (loc. cit.) *H. punctatus* appears to be larger than *H. spinipes*, with the elytra more strongly punctate-striate, the interstices scarcely rugulose, but with series of deep punctures, and the body light-coloured.

37. HYDNOBIUS SPINIPES, Gyll., Ins. Suec. iii. 709, 9—10 (*Anisotoma*); Thomson, Skand. Coll. ii. 29, 2; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

From Thomson's description (loc. cit.), this species seems

to be $\frac{3}{4}$ lin. long, with the elytra delicately punctate-striate, and the interstices obliquely and transversely strigose; in the male also the posterior femora have a spiniform tooth just before the apex on the lower side.

38. Anisotoma picea, Illig., Käf. Pr. 75, 2; Panzer; Er., Ins. Deuts. iii. 58, 6; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch states that this species was taken by the late Mr. Foxcroft in Perthshire, and was sent to Mr. Waterhouse by the Rev. A. Matthews for determination.

It may be distinguished from *A. brunnea* by the more prominent tooth of the hinder femora in the male, and the single curve of the hinder tibiæ in that sex; also by the obtuse, sub-rotundate hinder angles of the thorax, and the stouter club to the antennæ.

39. Anisotoma scita, Erichson, Ins. Deuts. iii. 70, 16; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch states that two specimens of this insect have occurred at Monks Wood, Hants; and that it is commonly represented by varieties of *A. calcarata*. I presume this is meant to refer to foreign Collections, as Mr. Crotch was himself the introducer of the species to England. I have certainly seen specimens sent from the Continent as *A. scita*, which were not correctly so named.

It resembles *A. calcarata*, but has the thorax not sinuous behind, near the hinder angles, the apical joint of the antennæ *not* narrower than the preceding, and the hinder femora in the male rotundate, and but little prominent, at the lower angle.

40. ANISOTOMA LITURA, Stephens; Wat. Cat.
ornata, Fairm., Ann. de la Soc. Ent. de Fr. 3me série, iii. 1855, Bull. p. 30.
13 sp. ——? Wat. Cat.

In Ent. M. Mag., vol. i. p. 167, I have given my reasons for the above synonyms.

The pale var. of *litura* occurs along with the type and intermediate forms of that species in the North of England; but I have as yet seen none but the pale variety in the South.

This pale var. is unquestionably, I think, the *A. ornata* of Fairmaire; a species, oddly enough, named from what its founder considers an aberrant form of his type.

41. CYRTUSA PAUXILLA, Erichson, Ins. Deutschl. iii. 81, 4; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

"One specimen from Monks Wood."

This species appears to be rather smaller than *C. minuta*, somewhat longer, of a flatter oval form, darker in colour, with the hinder angles of the thorax blunt (but not rounded off), instead of being moderately sharp and rectangular.

In the male the hinder tibiæ are suddenly dilated at the apex, and the hinder femora end in a right angle on the lower side, instead of having a recurved tooth.

42. LIODES CASTANEA, Herbst (Tetratoma); Erichson, Ins. Deutschl. iii. 91, 5; E. C. Rye, Ent. M. Mag. vol. i. p. 118.

The longer oval and flattish form of this insect, added to its thin legs, and the coarse and numerous punctures on the elytra, at once distinguish it from our other species.

1½ lin.; shining; black on the upper side, the thorax and elytra margined with pitchy red; the legs and underside reddish-brown, and the antennæ reddish-brown, with the seventh and three apical joints pitchy. The elytra have the striæ composed of coarse and somewhat irregular double rows of punctures, with the interstices strongly punctured.

Taken at Rannoch, Perthshire, by Mr. D. Sharp and Mr. Bishop in the early part of last autumn.

43. Onthophilus exaratus, Illiger, Mag. für Ins. vi. 48, 25 (1807), *Hister*; De Marseul, Essai Mon. sur la Fam. des Hist., Ann. de la Soc. Ent. de Fr. 3me série, iv. 552, 2; G. R. Waterhouse, Proc. Ent. Soc. 1 Feb. 1864, Zool. 8981 (1864).

Mr. Waterhouse has detected an example of this species in his own British Collection standing with *O. sulcatus*, as which insect he believes it was given to him many years ago, and has drawn our attention to the differences of the two species, in the hope of obtaining further evidence of *O. exaratus* being British. As yet it appears only known as an inhabitant of South Europe.

It differs from *O. sulcatus* as follows (amongst other characters): the two middle ridges of the thorax are separated by a shallow groove instead of by a slender impressed line; the sides of the thorax are straighter, and its entire surface is densely covered by very minute longitudinal scratches, whereas in *sulcatus* it is moderately densely and finely punctured. The elytra are rather less convex, and have six costæ on each, the first, third and fifth of which are rather less raised than the others; these alternate costæ being wanting, or scarcely distinguishable, in *O. sulcatus*.

44. EPURÆA OBLONGA, Herbst, Käf. v. 245, 20, Taf. 54, fig. 4 (*Nitidula*); Erichson, Nat. der Ins. Deutschl. iii. 153, 17.

Resembles *E. pusilla* in build, but is rather smaller and flatter, more delicately and closely punctured, with the front of the thorax very slightly hollowed (in fact, almost straight), and the apex of the elytra truncate. It differs from *E. longula* in its flattened surface and finer punctuation. It is yellowish-brown (almost straw-coloured when alive), with the usual deceptive triangular patch caused by the folding of the wings; rather closely and very finely punctured. The club of the antennæ is dusky at the tip, the apical joint being smaller than the two preceding. The head has two slight depressions in front, between the eyes, united by an almost obsolete line. The thorax is about a third shorter than broad, very gently hollowed in front, rounded at the sides, and with the margins flat, especially behind. The elytra are very long, more than twice the length of the thorax, the margins narrowly depressed, and the apex truncate, but rounded at the angles.

In the male, the middle tibiæ are dilated at the apex on the inner side, and slightly sinuate.

Taken by myself at Shirley, in the spring, under the bark of a felled pine, in company with hundreds of *E. pusilla*; also by Mr. Sharp and Dr. Power at the same place.

45. OLIBRUS LIQUIDUS, Erichs., Ins. Deutschl. ii. 117, 4; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch states that this species, the "*Stephensii*, Leach," of our Collections, has been long shown to be *O. liquidus*, Er., by Mr. Wollaston; also that the *O. flavi-*

cornis, Sturm, is a mere immaculate variety of *O. bicolor*, Fab., and does not occur in this country. I presume Mr. Crotch has satisfied himself that there is no sufficient description of Leach's species, as it is both owned and deposed in the same sentence.

46. ATOMARIA FUMATA, Erichs., Ins. Deutschl. iii. 378, 3; G. R. Crotch, Cat. Brit. Col.; id. Zool. 8999 (1864).

The exponents of the above species in our Collections, I believe, obtained their name from a specimen formerly in the possession of Mr. Wollaston, but recently given by him to me, to which Dr. Kraatz affixed a note "*fumata var. videtur.*" This insect was taken by the late H. Squire at Hammersmith Marshes, where it has since been found by Dr. Power, myself, and other metropolitan collectors. My attention having been, for the first time, directed to these Hammersmith specimens by Mr. Crotch's remarks, I found that they would not agree well with the description given by Erichson (loc. cit.) for *A. fumata;* which insect should be like *nigriventris*, Steph. (*nana*, Er.), but larger, more thickly punctured, with the thorax longer, and not so contracted in front.

I have, however, subsequently (on 12th June last) taken a specimen at Mickleham, by sweeping under fir trees, which answers in every respect to Erichson's *fumata;* and have since received several examples, also undoubtedly that species, from Mr. T. J. Bold, who took them in a fungus on a fir stump near Newcastle.

The Hammersmith specimens are invariably found in wet places, by cutting grass, &c., and seem to be rather smaller and flatter than the above-mentioned examples, with their elytra shorter, not so pointed behind, and exhibiting a more or less conspicuous livid stain near the apex, which diminishes

towards the shoulders; the thorax is, moreover, contracted in a greater degree, both in front and behind.

47. DERMESTES FRISCHII, Kugelann; Ent. Ann. 1863, 94, 81.

Mr. Pelerin has shown me a male of this species, taken by himself in one of the northern suburbs of London (and named, I believe, by Mr. E. W. Janson), which was either *in copulâ* with a female of *D. vulpinus*, or was in such a position as to warrant the supposition of coupling having taken place.

I believe Mr. W. Farren, who originally captured the species in England, also found it in company with *D. vulpinus*.

48. APHODIUS BOREALIS, Gyll., Ins. Suec. iv. 248, 13, 14; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch states that specimens of the *A. uliginosus*, Hardy, were referred to this species by M. Reiche; also that M. Thomson, in his recent volume, refers the *A. borealis*, Gyll., to the *A. putridus*, Sturm.

49. APHODIUS OBLITERATUS (v. Heyd. in Litt.), Panz., Faun. Germ. 110, 3; Erichs., Ins. Deutschl. iii. 883, 61; D. Sharp, Ent. M. Mag. vol. i. p. 169.

Determined by Mr. Sharp from specimens taken at Mickleham and near Edinburgh. I have also found it abundantly at Mickleham; and have no doubt it is mixed with *contaminatus* in Collections. It may be known from that species by its somewhat smaller size, comparatively greater bulk behind, more strongly punctured thorax (*the lateral margins of which have no fringe of stout hairs*), and the more flattened, less punctured and less pubescent inter-

stices of its elytra. In the male the outer apical spines of the anterior tibiæ are both shorter and less stout, and the inner spur is thin, and gradually and finely punctured, instead of being broad, and truncate obliquely at its apex, as in the male of *contaminatus*. The spur on the inner side of the apex of the posterior tibiæ in the male is, moreover, shorter than in the same sex of *contaminatus*.

The depression in the metasternum of the male of the latter species is also rather more defined, and has a very slender mesial slightly elevated ridge, instead of a longitudinal furrow as in the male of *obliteratus*.

50. Psammodius porcicollis, Illiger, Magazin für Insectenkunde, ii. p. 195, 2 (1803), *Aphodius;* G. R. Waterhouse, Proc. Ent. Soc. Feb. 1, 1864; Zool. 8980 (1864).

Mr. Waterhouse has detected a specimen of the above insect, mixed with *P. sulcicollis*, in Kirby's British Collection, lately belonging to the Entomological Society; and has directed the attention of English Coleopterists to the differences of the two species, with a view of obtaining further evidence as to *porcicollis* being considered British. It has, apparently, as yet only been taken in Southern Europe.

P. porcicollis is decidedly larger than *P. sulcicollis*, with scarcely any traces of oblique ridges, and no large punctures, at the back of the head. The thorax is more ample, with the coarse punctures in the transverse sulci more numerous and evident, especially behind; the elytra are more strongly sulcated, and have the punctuation larger; the interstices of the striæ are broader, and the outer interstice is continued from the base of the elytron only about half-way towards the apex, the two outer striæ becoming confluent beyond that point. The outer interstice in *sulcicollis* is united near the

shoulder, for a short distance, with the interstice next to it, then becoming free and extending to the apex.

51. CYPHON NITIDULUS, Thomson.

CYPHON FUSCICORNIS, Thomson; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch informs us that descriptions of these new species, and of two others, formed at the expense of *C. variabilis*, will be found in Kiesenwetter; also that, in his opinion, further investigation, and a larger series, will probably furnish us with one or two more. Mr. Crotch also mentions that he had types of these from M. Thomson for comparison.

I quite agree with Mr. Crotch as to the expediency of large series in this case; *Cyphon variabilis* requiring great consideration, as it is one of those pleasing species wherein no two specimens can be found exactly alike.

52. TELEPHORUS FIGURATUS, Mannerh., Bull. Soc. Nat. Mosc. 1843, p. 92; Kies., in Er. Ins. Deutschl. iv. 496, 21 (*Cantharis*); G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

"Three or four specimens at Weston." Mr. Crotch states that, until lately, he had confounded this insect with *T. rufus*, Linn.; and that Mulsant has pointed out the differences with his usual accuracy.

Kiesenwetter describes it as elongate, testaceous; the vertex, an angulated spot on the thorax, and the base of the femora, infuscate; and the body blackish beneath. It appears to vary in being either entirely testaceous, or in having the legs pitchy, with the knees testaceous. The head is small, and contracted behind, and the thorax rather narrowed in front; the entire insect somewhat resembling the species

in the section *Rhagonycha*, from which its claws separate it. It differs from *T. rufus* in its narrower form, and darker colouring; and in having the head contracted behind, and the thorax narrowed in front. From *T. bicolor* it may be known by its smaller head, and different coloured feet.

53. Telmatophilus Schönherri, Gyll., Ins. Suec. i. 173, 10 (*Cryptophagus Shönherri*); G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864).

Mr. Crotch remarks that this species, distinguished from its congeners by its dark femora, has been universally admitted by authors; and that M. Kiesenwetter, who has recently described the European species of the genus, says that the sides of the thorax are also much more rounded.

It would be as well, therefore, if British Coleopterists who meet with *T. Typhæ*, were to examine the sides of the thorax of all the specimens of that insect which happen to possess darker femora.

54. Dryophilus pusillus, Gyll., Ins. Suec. i. 294, 6 (*Anobium*); G. R. Crotch, Cat. Brit. Col. (*nec Wat. Cat.*)

This species was originally taken sparingly by Dr. J. A. Power, in my company, by sweeping under fir trees at Birch Wood on 21st June, 1863; and was subsequently taken at the same place, under similar conditions, by Dr. Power, Mr. D. Sharp, and myself, in great numbers, about the end of May in the present year.

The *Dryophilus pusillus* of Waterhouse's Catalogue is (as mentioned by Mr. Crotch, Zool. 9000, 1864) the *D. anobioides* of Chevrolat (*compressicornis*, Mulsant), which feeds in the stems of the broom.

D. pusillus may be at once known (in both sexes) from

anobioides, by the joints of the antennæ, from the 2d to the 8th, inclusive, being in the latter insect very compressed; and, in the male, not occupying so much space as the 9th joint alone.

55. ENNEARTHRON FRONTICORNE, Panzer, Ent. i. 98, f. 7 (*Apate*); Mellié, Ann. de la Soc. Ent. de Fr. 1848, 365, 3; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9000 (1864), *Rhopalodontus;* J. A. Power, Ent. M. Mag. vol. i. p. 138.

Mr. Crotch states that he has seen this insect in several collections.

Dr. Power has taken a considerable number of specimens in a fungus upon an old willow at Weybridge, on 11th September last.

It is very small, the largest examples being about the size of the smallest *E. affine*, from which it differs also in being decidedly narrower, the thorax especially being narrowed in front; the punctuation, moreover, is much finer and closer, and the pubescence is scattered thickly and evenly over the whole of the elytra, and not arranged in rows of scant hairs.

There is a slight metallic reflection from the pubescence, as in *Cis hispidus*.

56. TROPIPHORUS CARINATUS, Müller, Zool. Dan. Prodr. p. 86, 955 (*Curculio*); Schönh., Curc. ii. 313, 10; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864).

Mr. Crotch states that this species is the "*Æcidii*" of Marsham, existing in several collections, and closely resembling *T. mercurialis*.

It is included in Stephens' Manual, pp. 240, 1880, under the name of *carinatus*, Müll. I can hardly help thinking that Mr. Walton cannot have been well acquainted with this insect. In his paper on British *Curculionidæ*, (excerpted from the Ann. and Mag. of Nat. Hist. 1844, p. 102,) he says that he found, near Mickleham, *many* specimens with the alternate interstices of the elytra distinctly elevated; but, on his collection being dispersed after his death, I believe there was but one example of the true *carinatus* found in it. Mr. Walton remarks that the alternate interstices in *mercurialis* are sometimes scarcely, or very slightly, elevated; and it is not impossible that he may have mistaken specimens of the latter insect, in which the interstices were elevated a little more than usual for the species now under consideration.

I took one example of *carinatus* in the early part of last summer, between Norwood Junction and Shirley.

The interstices are not only more distinctly elevated than in *mercurialis*, but clothed with a row of distinct bristly hairs, pointing backwards; the thorax has a much more distinct, longitudinal, mesial ridge, and its sides are more gradually rounded towards the front.

57. Peritelus griseus, Oliv., Ent. v. 83, p. 358, 417, pl. 31, fig. 475 (*Curculio*); Schön., Curc. ii. 512, 1; Redt. Faun. Austr. 740; E. W. Janson, Proc. Ent. Soc. 7 Nov. 1864, Ent. M. Mag. vol. i. p. 171.

Some specimens were exhibited at the Ent. Soc. by Mr. E. W. Janson, on behalf of Mr. Sidebotham of Manchester; they are reported to have been taken at Ventnor, by Mr. Wainwright. It appears to be common in Germany and France. This insect resembles an *Otiorhynchus* (about the

size of *O. picipes*), but has no lateral lappets at the apex of the rostrum. It is brownish-grey, with the sides of the thorax and elytra greyish-white; the elytra are rather smooth and oblong-ovate.

58. Lixus filiformis, Fab., Syst. El. ii. 501, 15 (*Curculio*); Schön.; Redt., Faun. Aust. 752; E. W. Janson, Proc. Ent. Soc. 7 Nov. 1864, Ent. M. Mag. vol. i. p. 171.

Mr. Janson exhibited at the Ent. Soc. a specimen of this insect taken by Mr. Sidebotham of Manchester near Devizes. I am informed it was beaten either off oak or birch. It appears to be common on thistles in Germany, and may be known from the hitherto recognized British species by the basal joint of the antennæ being scarcely longer than the three first joints of the funiculus.

59. Tychius pygmæus, B. de Barneville, Rev. et Mag. de Zool. série ii. Tom. xii. (1860), p. 167; E. C. Rye, Ent. M. Mag. vol. i. p. 168.

Although M. de Barneville does not refer to the conspicuous shortness of the antennæ in his insect, there can, I think, be no doubt that it is identical with (and prior in publication to) the *T. brevicornis* of Waterhouse (Proc. Ent. Soc. 5 May, 1862; Zool. 8064 (1862); Ent. Ann. 1863, p. 99, 94).

It is very like *Miccotrogus picirostris*, but smaller, with the rostrum more slender, the thorax less convex, &c., and of course, having seven joints to the funiculus of the antennæ, instead of six, as in *Miccotrogus*.

60. Sibynes canus, Linn., Syst. Nat. Gmel. i. iv. 1754, 170 (*Curculio*); Schön., Cur. iii. 431, 1; Redt., Faun. Austr. 776, 5; E. W. Janson, Proc. Ent. Soc. 7 Nov. 1864, Ent. M. Mag. vol. i. p. 171.

Exhibited at the Ent. Soc. by Mr. E. W. Janson, on behalf of Mr. Sidebotham of Manchester; taken, I believe, near Devizes. It appears to be not rare in Germany, on dry hillocks. It is larger than *S. potentillæ*, of a pale ash color, with a middle line on the thorax, the suture, and alternate interstices still paler.

61. Ceuthorhynchideus Poweri, Rye, Ent. M. Mag. vol. i. p. 137 (descr.); E. W. Janson, Proc. Ent. Soc. 7 Nov. 1864, Ent. M. Mag. vol. i. p. 171.

Somewhat resembling the rufous varieties of *C. pyrrhorhynchus*, but differing from that species as follows. It is rather smaller, shorter, more convex, with the shoulders more rounded, the legs shorter and not so stout, and the rostrum and antennæ entirely pitchy; the thorax is rather shorter, with the constriction towards the front of its sides beginning nearer the base, and the dorsal channel having some ashy scales near the scutellum; the suture of the elytra is not clothed with ashy scales, and the striæ are not deeply cut, so that the interstices are only moderately elevated. The clothing of the interstices is composed of short, thin, rather depressed, scattered, yellowish-grey hair-like scales, instead of the usual broad, closely planted scales.

Three specimens were taken at Weybridge last June by Dr. Power, and Mr. E. W. Janson has exhibited at the Ent. Soc., on the part of Mr. Sidebotham of Manchester, two examples, taken at Silverdale, near Lancaster (named, I believe, by Dr. Power).

62. Hylastes angustatus (Herbst, Käf. v. iii. 9, tab. 48, f. 9, h.; *Bostricus angustatus, var. nigra*), Erichson, Weigmann's Archiv. 1836, Bd. i. 51, 8; Redt., Faun. Austr. 825 (*nec Gyll.*); E. C. Rye, Zool. 8904 (1864).

This species is included in Mr. Crotch's Catalogue; but, as there exists some confusion of nomenclature in the genus, and the common *H. palliatus* is omitted in the work in question, I cannot be certain which insect the name is intended to represent therein.

I have taken a specimen of *H. angustatus*, Er., at Holme Bush, and have no doubt that it is mixed with *H. opacus* in collections. It differs from that species as follows: it is narrower and more elongate; the punctuation of the thorax is rather coarser, the small spaces between the punctures being shining instead of dull; the tibiæ are a little more dilated, differing also slightly in the spines on their outer edge; and the rostrum exhibits a delicate but decided longitudinal channel, the rostrum in *H. opacus* being without any groove.

H. palliatus, which also has the rostrum grooved, is a larger, stouter insect, generally brownish instead of black; with the elytra more deeply and roughly punctured, and the thorax decidedly constricted in front, and with an elevated middle longitudinal line. It differs, also, from both *opacus* and *angustatus* in having the third joint of the tarsi more decidedly bilobed.

63. Clythra læviuscula, Ratz., Forstins, i. 201; Redt., Faun. Austr. 891; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864).

Mr. Crotch remarks that this species is exceedingly close to *C. bipunctata*, Lin. (*quadripunctata?*), but distinguished

by its hardly perceptibly punctured thorax; and that he has found two old specimens mixed with the common species.

64. Graptodera pusilla, Duft.; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864).

"Cambridge." Mr. Crotch states this was named for him by M. Allard.

Allard states that this species (the *G. Helianthemi* of his Galér. Anis. 85, 38) is larger than *G. oleracea*, more convex, and with the elytra less strongly punctured.

65. Aphthona nigriceps, W. Redt., quæd. Gen. et Spec. Col. Austr. p. 27, 25 (*Haltica*); L. Redt., Faun. Austr. 940 (1067) 5 (*Longitarsus*); Allard, Gal. Anis. 1861, 395, 116; E. C. Rye, Ent. M. Mag. vol. i. p. 117.

Much smaller than *A. lutescens*, from which it differs in being not so flat, and of a shorter oval form; also in having a black head and scutellum, but no black patch on the hinder femora, and the antennæ not so stout or deep black. It somewhat resembles *Thyamis atricapilla*, in miniature; but may, of course, be known from that insect by the short basal joint of its posterior tarsi.

Head black; antennæ pitchy brown, with the five basal joints testaceous; thorax rufo-testaceous; elytra testaceous, with the suture itself brown, and a more or less strongly developed pitchy-black sutural stain, never reaching to the scutellum or apex. Body black; legs testaceous, the hinder femora fusco-testaceous.

First taken by Mr. J. Harris of Burton, by sweeping the cranesbill (*Geranium pratense*) at Egginton, on the banks of the Trent, near Burton; afterwards taken in the greatest profusion, at the same place, and under similar conditions, by

that gentleman, Mr. W. Garneys, and myself, at the end of last August.

66. Chætocnema aridula, Gyll., Ins. Suec. iv. 663, 42—43 (*Haltica, striata*); Allard, Gal. Anis. 567, 171; G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864), *Plectroscelis.*

"Cambridge." Mr. Crotch states this was named for him by M. Allard.

I possess a specimen taken on the south coast. It differs from *aridella* in having the head and thorax very finely punctulated, the two basal joints of the antennæ with a black mark on the upper surface, and the thorax longer. My specimen is also larger than *aridella.*

From *confusa* it may be known by the black marks on the basal joints of the antennæ, the darker tibiæ, the duller appearance of its thorax, on which the punctuation is finer, and the finer punctuation of its elytra. In colour, also, it differs, being bronze, as in *aridella.*

67. Thyamis rutila, Illiger, Mag. vi. 67; Allard, Gal. Anisop. 131, 78 (*Teinodactyla*); G. R. Crotch, Cat. Brit. Col.; id. Zool. 9001 (1864).

"Weston-super-Mare." Mr. Crotch states this was named for him by M. Allard.

From Allard's description (loc. cit.), *T. rutila* differs from the common *jacobææ* in having brilliant red elytra, more strongly and deeply punctured, and in being brown underneath. The basal joint of the posterior tarsi appears also to be a little longer.

T. jacobææ often varies into a deep red colour, especially evident when alive: it would therefore be as well for British Coleopterists to examine these red varieties carefully.

68. Ptilium saxonicum, Gillm.; Wat. Cat.; G. R. Crotch, Zool. 8999 (1864).

Mr. Crotch states that this and the next species were omitted from his Catalogue, on the authority of the Rev. A. Matthews, who considers the examples on which he introduced them to be varieties of already recorded species.

69. Ptilium discoideum, Gillm.; Wat. Cat.

E. C. Rye.

284, King's Road, Chelsea, S.W.
12*th November*, 1864.

P.S. Since concluding the above notes, I have been enabled, by the courtesy of Mr. J. Sidebotham, to examine the specimens of *Peritelus griseus*, *Sibynes canus*, *Lixus filiformis*, and *Ceuthorhynchideus Poweri*, referred to at p. 74 et seq., all of which are fresh, carded, and well set. Mr. Sidebotham has also, in the most liberal manner, conceded to me examples of the first and last of these species.

Several specimens of the *Peritelus* were taken by Mr. Wainwright, of Manchester, at or near Ventnor, Isle of Wight, in April last. Mr. Sidebotham thinks they were most probably obtained by shaking herbage on banks over paper. Mr. Wollaston tells me that he has often wondered we did not possess this species, which is abundant on the continent; and that he should certainly have selected the Undercliff as a likely place for it.

A Darwinite would describe the insect as a cross between *Otiorhynchus picipes* and *Cneorhinus geminatus*.

One example only of the *Lixus* was found by Mr. Sidebotham, when beating oak or birch, in a plantation on the side of Roundwey Hill, near Devizes, Wiltshire, early in last June. This was doubtless only a straggler. The insect would most likely be obtained, if the thistle stems found in that neighbourhood were brought home and secured in a breeding-cage. It is somewhat like *L. bicolor*, but smaller and much less robust; the thorax has two dull-grey dorsal lines, and the elytra resemble dark specimens of *Erirhinus maculatus* in colour and marking.

Two specimens of the *Sibynes* were taken by Mr. Sidebotham, early last June, by sweeping in a lane between Devizes and Pottern. Mr. Sidebotham thinks they came off *Bryonia dioica*. Another example was also taken, about the same time, by Mr. Edleston, at Knutsford, near Bowdon, in Cheshire.

Of the *Ceuthorhynchideus* two specimens were taken at Silverdale, near Lancaster, by Mr. Sidebotham, between the 14th and 18th May last.

E. C. R.

HYMENOPTERA.

Notes on Hymenoptera.

By Frederick Smith.

I have great pleasure in contributing a few notes on Hymenoptera to the "Annual" of this year, having some valuable Entomological information to communicate, localities to point out for some of our rarest fossorial Hymenoptera, and to make known the discovery of a fine species of ant, new to the fauna of this country. The glorious summer and autumn that we so lately enjoyed, were in every respect highly favourable to the aculeate Hymenoptera; Entomologists will therefore be quite justified in expecting a valuable record of observations and discoveries; happily these anticipations will, I think, be fully realized.

Records no doubt exist of seasons equally favourable for the appearance of Hymenopterous insects, and memorable for the captures of new and rare species, but none perhaps that contain notices of more interesting discoveries, or a larger amount of additional Entomological information.

The addition of a new species, and that a very marked and distinct one, to the list of our British *Formicidæ*, is an event of rare occurrence, and, at the same time, one that has afforded me great pleasure; in addition to which the discovery of a locality that will probably yield nearly every species of our *Formicidæ*, and a very large majority of the fossorial tribe, gives me an opportunity of pointing out to my brother Hy-

menopterists a spot teeming with rarities in all the families of the *Aculeata*.

Nearly sixty years have passed since the publication of Kirby's "Monographia Apum Angliæ," yet notwithstanding the careful researches of subsequent Entomologists, some of the species, founded upon the examination of one sex only, have not yet been united to their legitimate partners; therefore, every discovery that proves the identity of any two or more thus constructed species, is, in my opinion, a great boon to science; it has been my good fortune to unravel one or two of these Entomological enigmas.

The appearance of an insect in large numbers year after year, for a considerable period, succeeded abruptly by its almost total extinction in the same locality, is one of a series of Entomological phenomena of which we have little or perhaps no very satisfactory knowledge. Arrested development, at some stage of an insect's transformations, would apparently account for it, to a certain extent, with some degree of satisfaction; but when it so happens, that the season of the insect's disappearance was apparently in every respect highly favourable for its reappearance, corresponding in fact with seasons in which the insect was observed in the greatest abundance, then it is that we are compelled to seek for causes in other directions, and usually to conclude by confessing our ignorance, and our inability to fathom the Infinite Wisdom that both regulates the coming and the going of these His creatures.

During the last twenty years I have assiduously searched for aculeate Hymenoptera at Hampstead Heath, and in its vicinity, and am consequently tolerably well acquainted with the species inhabiting that locality; but, alas! it is one that is being rapidly destroyed; the extension of the modern Babylon will soon surround, if it does not spread over, that richest of Entomological locations. But many rare species

are still to be found there in diminished numbers. One rarity, *Tiphia minuta*, is usually to be captured sparingly in the month of June. Last season, however, my attention was directed by Mr. Baly to the appearance of that species in unusual numbers. On visiting the spot pointed out, I literally found them in hundreds, where, even in the most favourable seasons, the capture of a dozen examples would have been considered a great harvest. *Tiphia minuta* may be truly called a *sun-shiner;* it runs with great rapidity, occasionally taking wing and flying over and near the ground, gyrating in circles with great rapidity. On the sun being momentarily obscured they drop instantly to the ground, a few seconds sufficing for their burying themselves in the sand, where they lie motionless until the sun again shines forth. On no previous occasion have I seen this insect in numbers at all approaching the multitudes observed on this occasion.

The typical species of the genus, *Tiphia femorata*, also occasionally appears in vast multitudes, and is usually a much more abundant insect than *T. minuta*. In the year 1858 I found *T. femorata* in incalculable numbers at Pakefield, near Lowestoft; some of the heads of the wild carrot were covered with them, but although I searched the same spot during the four following seasons but few were observed; and in 1863, even in the finest weather, at the proper period of the season, not more than two or three could be found.

It has no doubt been observed, that for the last three or four years I have commented upon the almost total disappearance of certain species of *Andrenidæ* from their former haunts near the metropolis, where year after year they formerly appeared in great abundance. The past season was apparently in every respect so congenial and suitable to these insects, that I confidently expected their appearance in some abundance, but I have been greatly disappointed,

as well as surprised, at their non-appearance. Of some of the formerly most common species I have not observed a single individual; of others rather an increased number, but still a very scanty number appeared. This great diminution, I trust, is not general, and that from other centres they will spread, and again, as formerly, be found in the vicinity of the metropolis. With me the leaf-cutting bees, *Megachile*, are become quite insects of rarity; and of the solitary representative of the genus *Anthidium*, in this country, I did not observe a single individual during the entire season; the latter insect is not a burrower in the ground, neither are the majority of the species of the genus *Megachile*, therefore we cannot attribute their disappearance to the supposed cause of the diminution of the number of ground-burrowing bees, namely, the occurrence of a succession of unusually wet seasons having caused their destruction. May it not be, as has been observed of many animals, birds and even of fish, that a temporary migration to other localities occasionally takes place even amongst insects, and that their reappearance may be confidently expected to be as sudden as was their departure.

Judging from the communications that have reached me, it appears, that perhaps in the memory of no living Entomologist have wasps been more generally abundant than during the past season; the depredations committed by these marauders in gardens and orchards have possibly never called forth more bitter complaints against them. In many districts a price has been put upon them, that has stimulated boys to join in their wholesale destruction. From the best information I have been able to obtain, the abundance of fruit has been such, that it has, in many cases, scarcely proved worth while to carry it to market, the cost of doing so being quite equal to the price the fruit would fetch. Such being the case, it becomes a question whether fruit-growers have

not been waging war against their friends; be that as it may, one thing is quite certain, we had enough and something to spare for the poor wasps. I for one cannot bring myself to join in the exultation that has been occasioned by their wholesale destruction. Whenever we observe the appearance of an insect so general and abundant, we may feel assured that its appearance is for some wise, although probably to us inscrutable, purpose.

It will be found that the majority of my Notes this year relate to insects captured at Bournemouth, Hants; and perhaps of all the localities that I have searched, Deal and its neighbourhood alone excepted, this is the richest in Hymenopterous insects. About two months of uninterrupted fine weather preceded my arrival, therefore many species were over for the season; but I think the list of captures subjoined will amply bear out my opinion of Bournemouth being one of the finest localities for Hymenoptera in England:—

Captures at Bournemouth during the month of August, 1864.

Fam. FORMICIDÆ.

Formica rufa.
„ congerens.
„ exsecta.
„ cunicularia.
„ nigra.
„ fusca.
„ umbrata.
„ flava.
„ fuliginosa.
Tapinoma erratica.
Myrmica ruginodis.
„ scabrinodis.
„ lævinodis.
„ sulcinodis.
Tetramorium cæspitum.

Fam. MUTILLIDÆ.

Mutilla Europæa.
„ ephippium.
Myrmosa melanocephala.
Methoca ichneumonides.

Fam. SCOLIADÆ.

Tiphia femorata.

Fam. POMPILIDÆ.

Pompilus fuscus.
„ gibbus.
„ plumbeus.
„ rufipes.
„ scpicola.
„ affinis.
„ exaltatus.

Fam. POMPILIDÆ—*cont.*
Pompilus hyalinatus.
Ceropales maculata.
Evagethes bicolor.

Fam. SPHEGIDÆ.

Ammophila sabulosa.
„ viatica.
Miscus campestris.

Fam. NYSSONIDÆ.

Nysson dimidiatus.
Mellinus arvensis.

Fam. CRABRONIDÆ.

Crabro cribrarius.
„ cephalotes.
„ patellatus.
„ Wesmaeli.
Oxybelus uniglumis.
Diodontus minutus.
Cemonus unicolor.

Fam. PHILANTHIDÆ.

Cerceris arenaria.
„ labiata.
„ ornata.

Fam. EUMENIDÆ.

Odynerus parietum.
„ trimarginata.

Fam. VESPIDÆ.

Vespa vulgaris.
„ germanica.
„ rufa.
„ sylvestris.

Fam. ANDRENIDÆ.

Colletes succincta.

Fam. ANDRENIDÆ—*cont.*
Colletes Daviesana.
Sphecodes gibbus.
„ ephippia.
Halictus rubicundus.
„ leucozonius.
„ cylindricus.
„ albipes.
„ prasinus.
„ flavipes.
„ æratus.
„ morio.
„ fulvicornis.
„ minutus.
Andrena Cetii.
„ thoracica.
„ pubescens.
„ denticulata.
„ tridentata.
„ bicolor.
„ argentata.
„ Smithella.
Cilissa hæmorrhoidalis.
„ leporina.
Dasypoda hirtipes.

Fam. APIDÆ.

Panurgus Banksianus.
„ calcaratus.
Nomada baccata.
„ solidaginis.
„ ochrostoma.
Epeolus variegatus.
Megachile versicolor.
Bombus muscorum.
„ terrestris.
„ hortorum.
„ lucorum.
„ lapidarius.
Apathus Barbutellus.

FORMICA CONGERENS.—The only British specimens that I had seen previous to its recent capture were two males and two workers from Loch Rannoch. This species constructs a heaped-up nest, similar to that of the wood-ant, which species it very closely resembles, although a very distinct insect. The worker is the most difficult to separate from that of *F. rufa*, but it is much more pilose, its head rather broader and shorter; the eyes pilose and smaller, and the scale of the petiole more pointed above; the vertex is more darkly coloured, the black colouring being sharply marked, not shading off into the rufous colour of the face, and the thorax is always more or less black above.

The male has the head and thorax covered with black pubescence; the female has the abdomen opaque, and covered with a fine cinereous pile; the abdomen of *F. rufa* is highly polished and shining.*

FORMICA EXSECTA, Nyl.—Female.—Shining; rufo-testaceous, the flagellum, the head above, the mesothorax and the abdomen nigro-fuscous; the base of the abdomen rufo-testaceous, the wings hyaline; the nervures flavo-testaceous; the occiput widely emarginate, and the scale of the petiole deeply notched above. (Frontispiece, Fig. 2 ♀.)

Length 3¼ lines.

Worker.—Head, thorax and legs rufo-ferruginous, slightly shining; the abdomen black; the flagellum and the vertex fuscous; the occiput widely emarginate; the scale of the petiole deeply notched. (Frontispiece, Fig. 2 ☿.)

Length 2—2½ lines.

Male.—Black, shining and pilose, the legs pale rufo-testaceous, the wings hyaline, the nervures rufo-fuscous, the

* *Formica congerens* is the species of ant in the nest of which Dr. Nylander first found *Tinea ochraceella*, near Uleaborg, in Finland.—H. T. S.

stigma dark brown; the head emarginate at the vertex; the scale of the petiole notched.

This is the finest addition that has been made to the British *Formicidæ* for many years; like *F. rufa*, this species builds a heaped-up nest, but one of much smaller dimensions; those which I observed not being more than eight or ten inches in diameter at the base, and this at the middle of autumn. According to the observations of Dr. Nylander, Dr. Mayr and others, the sexes of this species are developed during the month of July; consequently as I did not discover it until the end of August, I only obtained the workers. The male and female I have described from specimens transmitted to me by Dr. Mayr. This species was first discovered by Dr. Nylander in Finland, and first described by him in his fine monograph of the *Formicidæ* of that country. The species cannot fail of being recognized, the deep notch of the head is at once striking and distinctive.

Formica umbrata.—For the first time I took all the sexes of this species from the nest; they closely resemble those of *F. flava*, but present the following differences:—the worker has the scape and legs of the antennæ covered with a fine whitish pile, and the eyes are pilose. The female is readily separated, having the head fully as wide as the thorax, and the wings dark fuscous at the base. The male is quite black, and has dark smoky wings.

Tapinoma erratica.—This ant is extremely abundant at Bournemouth, where it was first captured, in this country, by Mr. Dale; it is certainly a widely-distributed species, having been found in Surrey, Hants, Middlesex, and in Cornwall at the Land's-End; it is doubtless overlooked, or confounded with *F. nigra;* from the latter it is to be dis-

tinguished with facility, by its having the scale of the petiole decumbent, resting on the oblique truncation of the metathorax; in *F. nigra* the scale is upright.

MYRMICA CÆSPITUM.—This species is apparently most abundant in situations near the sea; at Southend, Dover and Bournemouth it is not uncommon; and at the Land's-End I found it in great numbers under blocks of granite in October last.

METHOCA ICHNEUMONOIDES.—Mr. Dale, as well as myself, has found this very rare insect at Bournemouth.

EVAGETHES BICOLOR, St. Farg.—St. Fargeau described this insect in the "Encyclopédie Méthodique," in mistake, as the *Aporus bicolor* of Spinola; Shuckard endorsed the same error in his "Essay on the Fossorial Hymenoptera;" the former author has corrected himself in the "Histoire Naturelle," and in that work established the genus *Evagethes* for the reception of the species. In both genera the anterior wings have the same number of marginal and submarginal cells, but their relative proportion to each other is very different, independent of other structural variations. In the genus *Aporus* the prothorax is elongate, in *Evagethes* it is transverse; in the former the wings are inserted in the middle of the length of the thorax, at the sides; in the latter their insertion is considerably before the middle; *Aporus* has tridentate mandibles, in *Evagethes* they are bidentate.

I have hitherto held an opinion, differing from that of the above-named eminent Entomologists, and have considered *Evagethes* a variety of *Pompilus pectinipes* (*crassicornis*, Shuck.) I have on more than one occasion taken a specimen in company with *P. pectinipes*, at Weybridge, and was led to regard it as a variety of that insect, having the second

transverse medial nervure obsolete; this I was partly led to do by a remark in Shuckard's Essay: "the Rev. C. Bird showed me a remarkable variety (of *P. crassicornis*) which has upon the left side the nervures of *Aporus*." Having fortunately obtained a fine series of *Evagethes* at Bournemouth, including both sexes, I shall here characterize both genus and species afresh.

Genus Evagethes, St. Farg.

Head.—Subrotund, slightly wider than the thorax; eyes lateral, large and ovate; the ocelli in a triangle on the vertex; the mandibles bidentate; the antennæ inserted in the anterior part of the face, incrassate in the middle, and tapering to a point at their apex. Thorax somewhat gibbous; the prothorax transverse; the metathorax short and obtuse; the superior wings with one marginal and two submarginal cells; the marginal cell small, subtriangular, not extending beyond the second submarginal; the first submarginal cell oblong, the second subquadrate and slightly narrowed towards the marginal cell, receiving both the recurrent nervures; the second recurrent nervure received near to, not at, the apex of the cell. The anterior tarsi of the female ciliated outside, and all the tibiæ and tarsi spinose.

Evagethes bicolor.—Female.—Black, with the first, second and extreme base of the third segment of the abdomen red. Head with a fine silvery pile, most dense on the face; the anterior margin of the clypeus and the tips of the mandibles rufo-piceous. The thorax at the sides, beneath the metathorax and legs, with a fine silvery pile; the posterior margin of the prothorax arcuate; the wings fusco-hyaline, with a broad blackish border on their apical margins. Abdomen covered with fine silky silvery pile.

Length $2\frac{1}{4}$—$3\frac{2}{3}$ lines.

Male.—Black, usually more or less red on the second abdominal segment; sometimes entirely black; covered with a fine silvery pile; the border of the wings usually lighter than in the female.

Length $2\frac{1}{2}$—$2\frac{2}{3}$ lines.

This rare insect has been taken at Parley Heath by Mr. Dale, and by myself at Weybridge and Bournemouth. The examples referred to by Shuckard, as being in the Collections of Stephens and Curtis, were both the true *Aporus bicolor*.

Miscus campestris.—This very local insect is plentiful at Bournemouth in July and August; its other localities are Parley Heath; Ringwood; Dorsetshire; Hawley, near Blackwater, Hants, and Weybridge.

Crabro palmipes.—Male.—Black and shining. Head and thorax with distant delicate punctures; the face silvery; the scape outside, collar and scutellum yellow; the anterior legs yellow; the coxæ, trochanters, a line on the femora and tibiæ behind, a spot on the basal joint of the tarsi, and the claw-joint, black; the basal joint dilated, the following joints subtriangular; the intermediate and posterior legs with the base of the tibiæ and the basal joint of the tarsi white; wings hyaline; abdomen elongate.

Length $2\frac{1}{2}$ lines.

Female.—Black. Head smooth, shining, and finely punctured; a longitudinal impressed line between the ocelli, which extends a little beyond them; in front of the anterior ocellus is a deeply impressed line that extends to the face, which is canaliculated, smooth, and shining; the clypeus covered with silvery pubescence; a narrow line of the same runs half-way up the inner orbits of the eyes; the scape in front yellow; on each side of the ocelli is a slightly impressed

smooth depression. The mandibles black. Thorax shining and finely punctured; the mesothorax with three abbreviated raised lines in front, the central one longest; the metathorax smooth and shining, with an enclosed subcordiform space at its base, and a deep central longitudinal incisure; the wings hyaline and iridescent, with their extreme base yellow; the exterior margin of the tegulæ testaceous, the stigma black; the anterior and intermediate tibiæ in front, and the base of the posterior pair, pale yellow; the basal joint of the intermediate and posterior tarsi pale, with the apex black; the claw-joint rufo-testaceous; the spines at the apex of the tibiæ black. Abdomen clavate, with the tip of the apical segment ferruginous and sprinkled with silvery setæ.

Length 3 lines.

This is one of the rarest species of the British *Crabronidæ;* the female is described for the first time from a British specimen; it was unknown until the last season, when my son Edward took both sexes at Shirley, Surrey. I have thought a careful description of the unique example desirable; it is now in the Collection of W. H. L. Walcott, Esq., of Clifton, Bristol.

ANDRENIDÆ.

Halictus prasinus.—This hitherto rare species occurred in some numbers at Bournemouth in August last, the locality where Mr. Dale first discovered it; the male was taken for the first time. The female is fully described in the "Monograph of the British Bees." It is readily distinguished from all the other species of *Halictus* by its having the head and thorax of an opake dark olive-green; its abdomen black, with a cinereous fascia at the base of the second and third segments, the apical margin of the latter and the whole of

the following segments covered with fine cinereous pubescent pile; the apical segments frequently more or less abraded.

Length $4\frac{1}{2}$ lines.

Male.—Head and thorax shining obscure olive, and finely punctured; the apex of the clypeus white; the face thickly clothed with hoary pubescence, the cheeks more thinly so. Thorax thinly covered with hoary pubescence; the anterior tibiæ, all the tarsi, the extreme apex of the femora, and the base of the posterior tibiæ, pale rufo-testaceous; wings hyaline and iridescent, the costal nervures and the stigma dark fuscous. Abdomen black, elongate, and widest towards the apex, with a scattered hoary pubescence; a white pubescent band at the base of the second and third segments; the apical segment rufo-testaceous.

Length $3\frac{1}{2}$—4 lines.

It will be seen that the male differs from that of every known British species in having the apical segment of the abdomen pale testaceous; this alone will distinguish it.

ANDRENA DENTICULATA.—This rare species occurred at Bournemouth, but it was not taken until it was too late to obtain fine specimens of either sex; during June and July it would no doubt be found in fine condition.

ANDRENA TRIDENTATA.—August is the month in which this extremely rare insect appears; according to my observation it frequents the Rag-wort only. If we refer to Kirby's Monograph, we find a note appended to his description, "taken but once at Melton, near Woodbridge, Suffolk." In company with *A. tridentata* I found the equally rare *A. rufitarsis*, of which species Mr. Kirby remarks, "taken at Barham, very rare;" the localities are about eleven miles

apart; these observations on the localities of Kirby's species, taken in conjunction with the fact of both being found in some numbers on the same flower at Bournemouth, in addition to their very close resemblance, satisfy me that *A. rufitarsis* is the female of *A. tridentata*. In Mr. Kirby's own interleaved copy of the "Monographia," I found a note to the effect that *A. rufitarsis* was probably only a variety of *A. fuscipes*. This is certainly not the case; both sexes of the latter insect were extremely abundant at Bournemouth—*A. tridentata* was taken near to Christchurch.

The differences between the female of *A. tridentata* and the female of *A. pubescens*, are the following: *A. tridentata* ♀ is much more pubescent, the pubescence paler, nearly covering the abdomen, not leaving a naked space between the fringe on the apical margins of the segments; the apical fimbria is pale golden and is tipped with fulvous in the middle of its apical margin; all the tarsi are pale rufo-testaceous; the pubescencee which clothes the inner surface of the basal joint of the posterior tarsi is pale fulvous; this is also the colour of that which clothes the disk of the thorax; the flagellum is pale rufo-testaceous beneath, excepting the two basal joints, which are black. The female of *A. pubescens* has only the two apical joints of the antennæ pale; the anal fimbria is fuscous. Both sexes of *A. pubescens* frequent the common heath (*Calluna vulgaris*).

Andrena argentata.—This is a very local species, but abundant at Bournemouth; it was discovered about twenty years ago at Hawley, Hants, and at Sandhurst, Berks; a year or two subsequent to which I found it at Weybridge; since that time I have not met with it until the last season; it frequents the Heath.

PANURGUS CALCARATUS.—Extremely local in its distribution, but plentiful at Bournemouth; this insect frequents the common mouse-ear hawkweed (*Hieracium pilosella*).

NOMADA BACCATA.—This beautiful little species is parasitic upon *Andrena argentata;* it is plentiful at Bournemouth; the parasite and the bee I have always found together.

MEGACHILE VERSICOLOR.—I captured a single specimen of this very rare bee in a meadow to the west of the Sanatorium at Bournemouth; probably it was too late a period in the season; the male is not known.

BOMBUS SMITHIANUS.—This fine species was taken in June last in Shetland, by Mr. Rich; all the specimens that I have seen have been captured near Lerwick.

BOMBUS POMORUM.—The addition of this fine species to the British list is mainly due to my son Edward, who took a female in June last on the sandhills at Deal.

It will be observed that I have adopted an opinion differing from that of several eminent Hymenopterists in considering the *Bremus pomorum* of Panzer to be a true *Bombus*, not an *Apathus;* this arises from the fact of my having had specimens for examination. Opinions contrary to my own were, I have little doubt, based upon an examination of the figure in Panzer's "Fauna Germanica." In the year 1837 I captured three male humble bees, which at that time I regarded as very highly-coloured examples of the male of *Apathus rupestris*, and as such they were, without very critical examination, arranged in my Collection. A female *Bombus* being captured that was unknown to me, but which bore a strong resemblance to the three supposed *Apathi*, taken in the same neighbourhood, induced me to

re-examine the males, when I at once discovered that they were true *Bombi;* I feel no doubt of their being the same species, and as such I give descriptions of each. In my Catalogue of the British Bees I have given the *B. pomorum* as a variety of *Apathus rupestris*, but with a mark of doubt, never having seen either a British or European specimen.

Female.—Length 8 lines. Black: the face clothed with black pubescence; the clypeus smooth and shining, the labrum fringed with ferruginous hairs. Thorax clothed with black pubescence, obscurely fringed in front with a mixture of yellowish hair, a similar fringe on the scutellum; the legs with a short black pubescence, that on the basal joint of the tarsi beneath ferruginous; at the extreme apex of the anterior and intermediate tibiæ a little short pale pubescence. Abdomen: clothed with ferruginous pubescence, the basal segment with a mixture of pale yellow hairs, that on the extreme base being black; beneath, with a few scattered pale hairs.

Male.—Length 7 lines. Black: the face densely clothed with black pubescence, the clypeus with a few scattered black hairs. Thorax: clothed with pale yellowish-white pubescence, with a band of black between the wings; the legs with thin short black pubescence above; the femora fringed with long pale pubescence, that on the basal joint of the tarsi beneath ferruginous. Abdomen: clothed with fulvo-ferruginous pubescence, that on the basal segment is pale yellowish-white; the second segment has pale pubescence on the apical portion; beneath, it is very thin and pale. Panzer describes the pubescence as hoary-white, and it would doubtless be so after exposure to the sun, &c.; the colour of the hair on all the *Bombi* soon fades and loses its original brightness.

LEPIDOPTERA.

Notes on British Lepidoptera (excepting Tineina) for 1864.

By H. G. Knaggs, M.D.

Although the past season has yielded to the working Entomologist a fair sprinkling of some of the scarcer *Lepidoptera* (as will be seen by a reference to the table devoted, in this paper, to their exposition) our list of novelties is meagre, three species only having been added to the British Fauna, viz. :—

Nonagria brevilinea, Fenn.
Eupithecia lariciata, Freyer.
Eupithecia campanulata, Herrich-Schäffer.

Before, however, commencing the subject of these new species, a few remarks on certain passing points of interest may not be unacceptable to the reader of these pages.

Procris Geryon and P. statices.

The suit of "*Geryon* versus *statices*" progresses under the impartial management of the Rev. E. Horton; thus far the plaintiff seems to have the best of it, and will doubtless in the end establish an independence. It is to be hoped that Mr. Horton will continue to prosecute—his investigations and complete the chain of evidence which he has already put before us (Ent. Mo. Mag. vol. i. p. 141). His discovery that the young larvæ of both species are "miners" is not less extraordinary than true.

An Hepialus —— n. sp. ? seu H. humuli, var. ?

An extensive series of a species of *Hepialus* captured in the Shetlands during the past season, and now in the collection of the British Museum, are the most perplexing things I ever remember to have met with among the *Lepidoptera* of this country; their average size is about that of *H. humuli*, of which species they are also about the same shape, but they have uniformly such an excessively different appearance in the coloration and adornment of the wings, and have, moreover, such an inordinate tendency to variation,—the female, unlike our own *humuli*, occasionally appearing in the white clothing of the male, and the male in that of the female—that their appearance is altogether very remarkable. As regards the fore-wings, the males vary from being quite unicolorous to having all the markings of the female—the ground colour of the male is at one time dirty dead white, at another dirty orange-brown, and even brownish-black. The ground colour of the female is sometimes dull orange-brown, sometimes dull dirty white. The hind-wings, more especially of the females, are very dark.

From the short sight I had of these specimens, I am inclined to consider them a climatic variety or race of our common *H. humuli*—this may, or may not be the case—but if so, they afford a most curious and striking instance of a species, insulated and existing under extra-ordinary surrounding conditions, coming to possess characteristics of its own apart from those of its ancestral progenitors, and best adapted for that mode of life under which circumstances have placed it.

Leucania littoralis.

It appears that the larva of this species, recently discovered on the Continent and of which a description, ex-

tracted from the "French Annals," was given in last year's "Annual," has been known to Mr. Buckler since 1861 (Ent. Mo. Mag. vol. i. p. 48), and our northern collectors claim to have been acquainted with it for a still longer period. This shows how advisable it is that all new facts and observations should be recorded at as early a date as possible.

Nonagria neurica and N. arundineta.

In his synonymic Catalogue published in 1859, Mr. Doubleday adopts the name of "*neurica*," Hübner, and gives as a synonym "*Hessii*," Bdv., which, according to M. Guenée, is identical with "*dissoluta*" of Treit. and distinct from "*neurica*," Hübner. Dr. Staudinger, on the other hand, gives "*dissoluta*," Treit. and "*Hessii*," Bdv., as aberrant forms of *Nonagria* "*arundineti*" (*ta*), Schmidt (Ent. Zeit. 1858, p. 367), which he looks upon as distinct from "*neurica*," Hübner. Mr. Doubleday did not recognize the name "*arundineta*" bestowed upon the insect which had hitherto gone, in our cabinets, by the name of "*neurica*," Hb.

For the information of those who may not have access to the "Entomologische Zeitung" it may be well to say, that Herr Schmidt of Wismar detected and separated two species which had up to that time been confounded under the name of "*neurica*;" one of these, which agreed with his recollection of Hübner's figure, he considered should retain the original name—for the other, of which a figure is given in Dr. Herrich-Schäffer's Syst. Bearb. d. Schmett. v. Europa (Bd. ii. S. 244, No. 186), which, he says, is identical with the ordinary form of our own cabinet specimens, he proposed the name "*arundineta*." Herr Schmidt acknowledges that the perfect insects are so closely allied that any one having only one of the species would not know to which to refer it,—indeed Dr. Herrich-Schäffer was only convinced after some

persuasion. But Herr Schmidt gives one good difference, which is, that the underside of the true *neurica* has no markings, while that of *arundineta* possesses a lunule near the centre of each of the four wings. He further remarks, that their respective larvæ and pupæ differ, and that each of the two species frequents a different kind of locality. Herr S. places *arundineta* between *Hessii* and *neurica*, and as the two latter are at present considered in this country as mere variations the connection between the three must be very close indeed. Dr. Staudinger places *neurica*, Hüb., between *geminipuncta*, Hatchet, and *arundineti* (*ta*), Schmidt.

An Apamea —— n. sp.? seu A. oculea, var.?

A very distinct-*looking Noctua* has been secured by Mr. Buckton at Torquay during the past season; this specimen for a time much puzzled Mr. Henry Doubleday, to whom it had been entrusted for the purpose of identification, but, as on very careful examination the form, position of the lines, &c. agree with some variations of *Apamea oculea*, he thinks with me it is possibly only an extraordinary variety of this species, an opinion also entertained by M. Guenée, who has seen a photograph of the specimen. The example in question has a most singular appearance; the ground colour is white, the basal patch, central fascia, and that part of the wing towards the hind margin, brown, the whitish renal stigma showing up conspicuously in the central fascia.

Coremia ferrugata and C. unidentaria.

Touching the specific distinctness of these two forms, Mr. D'Orville (Ent. Mo. Mag. vol. i. p. 92) gives a good reason for believing *Coremia unidentaria* to be distinct from *C. ferrugata:* namely, that each produces its like, a fact which receives corroboration from the experience of several

Entomologists who have, within my knowledge, reared both species from the egg—indeed I have, myself, bred them from the egg, side by side, with the same result as that mentioned by Mr. D'Orville. Since the article to which I have alluded was penned, Mr. Doubleday has pointed out to me excellent and constant distinctive characters which exist in the hind-wings of the perfect insects: thus in *C. ferrugata* the hind-wings present a more or less mottled appearance from greater contrast between the ground colour and markings, while in *C. unidentaria* they have a confused, somewhat unicolorous, look: the darkest shading of the hind-wing in *C. ferrugata* is at the *hind margin*, which is, as it were, deeply bordered, but in *C. unidentaria*, on the contrary, the *base* of the hind-wing is the most darkly shaded part—the transverse lineations across the middle are much more strongly marked in *C. ferrugata* than in *unidentaria*, &c. &c.

The above distinctions between these species hold good even when specimens closely approximating in colour are opposed, so that this question may now be looked upon as settled.

Cidaria (?) sagittata.

The larval state of the above geometer is now no longer doubtful, Mr. Buckler, of Emsworth, having reared the perfect insects from the larvæ from which the excellent description, in last year's "Annual," was taken (Ent. Mo. Mag. vol. i. p. 71). The next business will be to "locate" this species.

Cidaria immanata and C. russata.

A careful diagnosis, aided by woodcuts, of these frequently confounded species has been given by the Rev. John Hellins, assisted by Mr. Doubleday, which completely sets the matter of their specific distinctness at rest (Zool. 8986). These

notes should be perused by every Entomologist who is desirous of making himself acquainted with their differences.

One of the chief points of distinction between the imagos (which I give in Mr. Hellins' own words) "is to be found in the outermost line of the broad central band; in both species this commences on the costa at about two-thirds of the distance between the base and the tip, and runs across the wing for a little way with very small teeth, then shoots out into a large bilobed (sometimes in *C. russata* trilobed) tooth, which is followed by another not quite half as big, and lastly slants away to the inner margin with three more teeth not differing much in size; but the distinction is this, that in *C. immanata* these teeth, especially the largest of them, are more prominent and acute (Haworth's 'fascia valdè producta et utraque argutè irregulariter dentata'): in *C. russata* they are not so prominent, and are often rounded (fascia externè minus producta)."

At page 165 of the Ent. Mo. Mag. vol. i., Mr. Hellins discusses this question still more fully, and with great care contrasts the earlier stages of these insects.

Mr. Bond having now a fine series of an *Ephestia* from cork, I have been enabled, through Mr. Stainton, to add the following remarks upon it:—

EPHESTIA FICELLA, Douglas.

E. Ficella, Douglas, Proc. Ent. Soc. 1851, p. 114.

E. Ficella, Stainton, Manual, ii. p. 169.

"The sight of a fine series of specimens recently bred from cork, enables me," writes Mr. Stainton, "to add considerably to the very brief description given of this insect in the 'Manual.'

"The insect varies very considerably in size, from 8—11 lines, in expanse of wings.

"The anterior wings are much narrower than in *Ephestia elutella*, especially at the base, and the costa beyond the middle is much rounded. The form of the first and second lines is very different in the two species, but in obscurely-marked specimens the first line is scarcely traceable in *E. Ficella*. If we select, however, a sharply-marked specimen, we notice at once, that, instead of a nearly straight appearance, it forms a W between the costa and subdorsal nervure, below which it again slopes nearly parallel to the first slope from the costa (the first stroke of the W).

"That is to say, this line slopes outwardly from the costa till past the subcostal nervure, then returns towards the base of the wing till it intersects the medial nervure, then slopes outwardly in the fold, returning again towards the base of the wing till intersected by the subdorsal nervure, below which it again slopes obliquely outwards to the inner margin.

"The second line slopes obliquely inwards from the costa to below the subcostal nervure, where it makes a very sharp angle, and then, after again approaching as near the hind margin as it was at its origin on the costa, it slopes gradually towards the inner margin; on the middle of the disc is a black spot, and, above it, a little anterior, is a smaller one, frequently indistinct.

"The first line is preceded by a pale band, and the second line is followed by a pale band, which, on the right wing, has much the appearance of a written 5.

"Mr. Bond's specimens bred from cork have a much greyer appearance than the specimens bred by Mr. Douglas in 1851 from figs; but the markings in the two are precisely identical. Mr. Shepherd has also bred this insect

from almonds. Zeller, in his Monograph of the Knothorns in the 'Isis' of 1848, has several species of *Ephestiæ*, with which I am only acquainted by the descriptions, some of which are made from single specimens. I should not, however, be surprised, if *Ficella* were eventually to prove identical with Zeller's *Ephestia Abstersella*."

It may also be interesting to notice, that, at the August Meeting of the Entomological Society of London, an albino variety of *Eubolia bipunctaria*, a species never previously known to present such an aberration, was exhibited by Mr. J. Jenner Weir.

On the other hand, a wonderful instance of melanism has been shown to me by my friend Mr. Doubleday; in this case, the subject was a specimen of *Hypercompa dominula*, and the alteration in appearance, from the ordinary gaily-coloured form to a handsome rich steel-blue-shot insect, with black spots instead of white spots, was very remarkable, so much so as, for a time, to render recognition of the species extremely difficult; it was captured last June near Deal by Mr. Harding.

With the above extraordinary cases of albinism and melanism I terminate these few preliminary notes, and at once proceed to the subject of the new species for 1864, merely remarking, that, with respect to the two "pugs," the perfect insects only are referred to by me, Mr. Crewe having kindly forwarded descriptions of the larvæ of these and other *Eupitheciæ*, which will be found in a separate form at another part of this volume.

NEW SPECIES FOR 1864.

NONAGRIA BREVILINEA, Fenn, Ent. Mo. Mag. vol. i. p. 107. Frontispiece, Fig. 3.

THIS interesting addition to our *Leucanidæ* was made by Mr. C. Fenn, who, on the 4th of August last, at Ranworth, captured a male example as it was flying among *Typha latifolia*.

This species is not very closely allied to any described *Nonagria*, but, on the whole perhaps, bears more resemblance to *N. neurica* than to any other known species, though it could hardly be mistaken for it by the merest beginner.

Of the excellent characters which Mr. Fenn has pointed out in *Nonagria brevilinea* may be mentioned the short black basal streak, like that of *Apamea basilinea*, from which the insect derives its name, the entire absence of stigmata or black spots on the fore-wing, the curved row of dots beyond the middle (as, for example, in *Nonagria lutosa*), the conspicuouly paler colour of the apical veins (somewhat like those of *Leucania obsoleta*), the perfectly immaculate hind margin of the wings at the insertion of the cilia, the presence of an almost obsolete row of dots on the hind-wing, and the absence of any approach to a lunule on the same—many other good characteristics might with ease be pointed out, but Mr. Fenn has, I trust, already said enough upon the subject to convince the most sceptical. Perhaps it may here be well to remark that during a very pleasant day, in the middle of October last, which I spent at Epping, the subject of *N. brevilinea* became one of the topics of conversation, and Mr. Doubleday certainly expressed himself as convinced that Mr. Fenn's insect was a new species; he did not, however, seem by any means so satisfied that Herr Schmidt had acted judiciously in having named "*arundineta*" from recollection of Hübner's figure.

Eupithecia lariciata, Freyer.

Frey. Neu. Beitr. iv. p. 135, pl. 366—Her.-Sch. p. 119 et 127, fig. 170 (173, 174, var.) Gn. ii. 327—Led.—Lah. 191—*Larv.*, Frey.

Of this pug Mr. Doubleday thus writes (Ent. Mo. Mag. vol. i. p. 94):—"* * * In the autumn of 1862 Mr. Thomas Eedle of Hackney brought me a number of *Eupithecia* which he had taken in the course of the summer, and I detected among them five or six specimens of this species. I had very little doubt about its being the true *lariciata* of Freyer, but I was desirous of seeing the larva before I published any account of it. * * * Mr. Hopley discovered the insect in another locality, and kindly sent me some eggs a few weeks since, from which I have reared larvæ corresponding exactly with Freyer's figures; doubt on the subject is therefore removed, and *Eupithecia lariciata* must be added to the British lists."

Mr. Edward Hopley (Ent. Mo. Mag. vol. i. p. 50) gives for this species two distinct localities, namely, "on Ashdown Forest, in a pine-plantation near the little hamlet of Wych-Cross," and "on Leith Hill," in which latter locality he had taken it in the previous year. Mr. Hopley, after going on to state that the end of May is the best time to look after the perfect insect, remarks, "it bears considerable resemblance to *Eup. castigata*, but the wings are longer and the colour less brown in tint; a white spot behind the thorax also presents a good character." As these distinctions are amply sufficient to enable any Entomologist to separate these species, I refrain from giving a further diagnosis. The same differences will readily distinguish it from *Eup. pusillata*, to which it also bears a resemblance, and between which and *Eup. castigata* M. Guenée has very appropriately placed it.

The larva and pupa are described by the Rev. H. Harpur

Crewe at Zool. p. 9254—at Ent. Mo. Mag. vol. i. p. 141, —and elsewhere in this present volume of the "Annual."

EUPITHECIA CAMPANULATA, Herrich-Schäffer.
H.-S. Correspond. Nr. 17;—(?) *Denotata*, Hübner, 455—
et Breyer. Frontispiece, Fig. 6.

We are indebted to the Rev. H. Harpur Crewe, the most observant student and indefatigable collector of the *Eupithecia*, for the addition to our lists of this interesting pug. The discovery resulted from the perusal of a very short article recently published by Dr. Breyer of Brussels, in a little pamplet, wherein Dr. B. mentioned the fact of his having found the larvæ of this species somewhat plentifully in the seed-capsules of *Campanula trachelium*, on which Mr. Crewe observes (Ent. Mo. Mag. vol. i. p. 142), "as this plant is by no means uncommon in many parts of England, it seemed to me that there was no just cause or impediment why the insect should not occur as well, so one afternoon in August I sallied forth into a wood not far from hence, where I knew the plant grew, and set to work to look for the larvæ of *E. campanulata*. Having gathered a few plants I knocked them against the sides of my umbrella, and soon saw a number of small pug larvæ crawling about, which were totally unknown to me. Having made up my bag I returned home and shortly afterwards enclosed two full-fed larvæ in a quill and posted them to Dr. Breyer, who forthwith returned answer that they were true and indubitable *Eup. campanulata*." This little episode should, it strikes me, impress the moral so often reiterated by Mr. Stainton, that by paying more attention to the literature of our continental "brethren of the pin and net," we should multiply our own discoveries—not only of species but of facts—and so render more progressive the entomological science of this country.

Although there can be no shade of doubt respecting the occurrence of this species here, the perfect insects have not as yet made their appearance. But from continental types kindly lent to me by Mr. Crewe I am enabled to mention a few of the distinguishing marks of this pug. Both Mr. Crewe and Mr. Doubleday place it in the group "L." of M. Guenée (it was quite unknown when M. Guenée's book was written), between *Eup. absynthiata* and *Eup. minutata*, but it may readily be distinguished from either, or from any other of its more nearly allied congeners, by the less smooth and silky appearance of the fore-wings; the less rounded apex of the wing; the much fainter, almost obsolete, costal markings; the less conspicuously pale patch formed by the expansion of the subterminal line near the anal angle; the rounder and less distinct form of the discal dot; and by the paler ground colour, especially towards the base, of the hind-wings, which indeed bear a much greater resemblance to those of *Eup. pimpinellata*, Treit., but the fore-wings of the latter species (excepting in the want of silky lustre) differ from those of *Eup. campanulata*, even more than the members of the *absynthiata* group. *Eup. campanulata* slightly resembles also in some points *Eup. subnotata*. Dr. Staudinger in his "Catalogue of European Lepidoptera" places this insect between *dodoneata*, Gn., and *tripunctaria*, H.-S.—but it would seem to be a far more natural arrangement to fix its ordinal position after *Eup. subnotata*, and thus form a connecting link between that species and group "L." of M. Guenée, more especially as *Eup. vulgata*, the first of the group, differs from its near allies in wanting the smooth silky surface of the fore-wing. A description of the larva and pupa is given Zool. p. 9260—Ent. Mo. Mag. vol. i. p. 142—and also in this present "Annual," in each case from the pen of the Rev. H. Harpur Crewe.

A Table of Local and Scarce British Lepidoptera captured in 1864.

(Arrangement of "Stainton's Manual.")

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Apatura Iris	Haselmere	C. G. Barrett ...	July ...	In litt.	
Argynnis Lathonia	Killarney	E. Birchall ...	Aug. 10 ...	E. B. in litt. ...	One specimen on the wing.
	Ramsgate	W. Groves ...	Sept. 17 ...	Entom. 132.	
Polyommatus Corydon ...	Notting Hill... ...	A. H. Clarke ...	Aug. 14 ...	A. H. C. in litt.	A singular locality.
Thecla betulæ	Cork	G. F. Mathews ...	Sept. 5 ...	E. M. M. 116 ...	A new locality.
	Wallingford	C. & J. Fenn ...	Aug. (b.) ...	J. F. in litt.	
Theela W.-album	Chertsey	A. H. Clarke ...	Sept. 3 ...	In litt.	On bramble blossom.
Pamphila Aetæon	"Burning Cliff" ...	T. Blackmore ...	July (e.) ...	E. M. M. 121 ...	Rather earlier this year.
Procris Geryon	Worcester	Rev. E. Horton ...	May 18 ...	E. M. M. 141 ...	Interesting notes given.
Acherontia atropos	Haselmere	C. G. Barrett ...	Sept. ...	In litt.	Larvæ on potato.
Sphinx convolvuli	Near Alloa	R. Borthwick ...	Sept. 19 ...	E. M. M. 143 ...	In a garden.
Chœrocampa celerio... ...	Near Alloa	— Mailler	Sept. 21 ...	E. M. M. 143 ...	At rest on a building.
	Canterbury	Mrs. Parry... ...	May? ...	B. P. verb. eom.	Flying in a garden.
Sesia bombyliformis ...	Cambridge	Rev. C. Grinstead	July 16 ...	E. M. M. 123 ...	A larva found.
Trochilium scoliæforme ...	Llangollen	E. Birchall ...	June 5 ...	In litt.	
Trochilium culiciforme ...	Near Battle	A. Jones	May 25 ...	J. F. in litt.	
	Darenth	W. J. Argent ...	June 23 ...	Y. E 117 ...	On a stunted bireh.
Stauropus fagi	Aylesbury	W. E. Parsons ...	July 13 ...	E. M. M. 72 ...	At rest on a fir tree.
Notodonta bicolora	Killarney	P. Bouchard ...	...	F. B. verb. com.	
Ptilodonta palpina	Near Bury	E. Skepper ...	...	E. M. M. 143 ...	Bred from pupæ dug at poplars.
Drymonia chaonia	Exeter	"A Young Man"	April 25 ...	E. M. M. 21 ...	Flying round a lamp.
Drymonia dodonea	Sherwood Forest ...	A. Hide	Aug. 13 ...	Y. E. 247 ...	In larva and pupa states.
Leiocampa dictæoides ...	Portsmouth	C. J. Cruttwell ...	May 6 ...	Y. E. 86 ...	Bred.
	Taunton	A. J. Spiller ...	...	Y. E. 248 ...	At lamps.
Clostera anachoreta	Folkestone	E. Meek	July (m.) ...	E. M. M. 123 ...	Two larvæ.
Clostera reclusa	Lewisham	C. Miller	Sept. ...	J. F in litt. ...	In the larva state.
Orgyia gonostigma	Wimbledon	G. Gibson	June & Aug.	E. M. M. 121 ...	? Double-brooded when fed on sallow in captivity.

Local and Scarce British Lepidoptera captured in 1864—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Lithosia helvola	Bournemooth	H. G. Knaggs	July (e.)	H. G. K.	Jarred out of firs.
Lithosia stramineola	Surlingham	J. Fenn	Aug. (b.)	J. F. in litt.	
Lithosia complana	Deal	C. Miller	July (e.)	J. F. in litt.	Commonly.
Lithosia caniola	Howth	E Birchall	Aug. 6	In litt.	Also bred from larvæ which fed on *Lotus corniculatus.*
Lithosia muscerda	Horning Ferry	— Fuller	July (e.)	J. F. in litt.	About 30 specimens.
Nudaria senex	Lewisham	C. & J. Fenn	Aug. (b.)	J. F. in litt.	In some numbers.
Spilosoma papyratia	Near Cambridge	Rev. C. Grinstead	July 16	E. M. M. 123	At rest on sallow.
Trichiura cratægi	Tuddenham	E. Skepper		E. M. M. 143	In the larva state.
Gastropacha ilicifolia	Lynton, N. Devon	Rev. E. Horton	Aug. 3	E. M. M. 121	A new locality — one larva taken, which has since died.
Drepana unguicula	Epping Forest	W. Machin	Sept.	E. M. M. 148	In the larval state.
Cymatophora fluctuosa	West Wickham	E. Meek	May	E. M. M. 50	Bred from larvæ beaten from birch.
	Haslemere	C. G. Barrett	June & July	In litt.	
Cymatophora ocularis	Bury St. Edmunds	E. Skepper		E. M. M. 143	From a pupa dug last autumn
	Near Cambridge	R. Whyatt		Entom. 69	
Apatela leporina	Darenth	A. Jones	July	J. F. in litt.	
Acronycta alni	Near Marlborough	— Parrington	Sept. 5	E. M. M. 143	A larva found.
	Near Birmingham	F. Enoch	Aug. 27	E. M. M. 143	Ditto, from Oak?
	Selby	W. Bowers	Aug. 11	Y. E. 247	From hazel.
Acronycta auricoma	From near Dover	T. Blackmore		In litt.	Bred from captured larvæ.
Leucania littoralis	Bournemouth	R. M'Lachlan	July	Verb. com.	Among *Ammophila arenaria.*
Leucania straminea		A. Jones and	July and	In litt.	
Leucania phragmitidis		C. & J. Fenn	August	E. M. M. 145	Freely distributed by these three gentlemen.
Tapinostola Bondii	Folkestone	E. Meek	July (m.)	E. M. M. 123	Pretty common.
Nonagria despecta	Lewisham	C. & J. Fenn	August	J. F. in litt.	Rather abundant.
Nonagria neurica	Horning Fen	— Fuller	August	J. F. in litt.	A few specimens.
Xylophasia scolopacina	Sherwood Forest	A. Hide	Aug. 13	Y. E. 247	
Xylina conspicillaris	Worcester	Rev. E. Horton	April 19	E. M. M. 24	Pupa dug—imago emerged in forenoon.
	Worcester	A. Edmunds	April	E. M. M. 50	Two specimens bred.

Apamea fibrosa	Surlingham	J. Fenn	August ...	In litt.	Abundantly.
Miana expolita	Near Hartlepool ...	R. Merryweather ...		E. M. M. 144 ...	Flying by day.
Hydrilla palustris	Quy Fen, Cambridge	— Scofield... ...	May 29 ...	Ent. Soc. ...	Previously unique in the Collection of T. H. Allis, of York.
Agrotis saucia	Torquay	Rev. J. Greene ...	...	Entom. 116 ...	At ivy bloom.
Agrotis lunigera	Freshwater	J. Fenn	July ...	In litt.	
Agrotis corticea	Freshwater	J. Fenn	July ...	In litt.	
Agrotis cinerea	Llangollen	C. S. Gregson ...	May 19 ...	E. M. M. 50 ...	Bred from a larva found.
	Freshwater	J. Fenn	July ...	In litt.	
Agrotis agathina	Sheffield	T. Swinden ...	April ...	Y. E. 117 ...	Larvæ taken.
Agrotis præcox	Lowestoft	E. Skepper ...	August ...	E. M. M. ...	Among sea-marram.
Agrotis lucernea	North Devon ...	Rev. E. Horton ...	...	E. M. M. ...	A new locality.
Agrotis Ashworthii	Llangollen	E. Birchall ...	July ...	In litt.	At sugar.
Tæniocampa leucographa ...	Near Croydon ...	C. Miller	March (e.) ...	J. F. in litt. ...	At sallows.
Orthosia suspecta	Sherwood Forest ...	A. Hide	Aug. 13 ...	Y. E. 247	
Dasycampa rubiginea ...	Exeter	"A Baker" ...	March (e.) ..	E. M. M. 21 ...	Flying round a lamp.
	Oatlands Park ...	S. Stevens... ...	Oct. (b.) ...	E. M. M. Entom.	At sugar.
Hoporina croceago	Sanderstead	W. P.	April ...	Y. E. 248 ...	Two beaten from sallow.
Xanthia citrago	Blackheath	A. Jones	Aug. (e.) ...	J. F. in litt.	
Xanthia aurago	Chertsey	A. H. Clarke ...	Sept. 7—16	In litt.	At sugar.
Cirrœdia xerampelina ...	Chertsey	A. H. Clarke ...	Sept. 16 ...	In litt.	At sugar.
Dianthæcia conspersa ...	Croydon	J. Fenn	July ...	In litt.	
Dianthæcia capsophila ...	Howth	E. Birchall ...	June 12 ...	E. B. in litt. ...	Also larvæ on *S. maritima*.
Dasypolia Templi	Howth	E. Birchall ...	Oct. 4. ...	In litt.	Six at light, some of them $2\frac{1}{2}$ inches across the wings.
Epunda lutulenta	Erith	C. T. Cruttwell ...	Sept. ...	Y. E. 287.	
Aplecta occulta	Perthshire	N. Cooke	June ...	E. B. in litt.	
Hadena genistæ	Charlton	A. Jones	June ...	J. F. in litt.	
Hyppa rectilinea	Perthshire	N. Cooke	June ...	E. B. in litt.	
Cloantha solidaginis ...	Inveray	E. Birchall ...	Sept. 1 ...	In litt. ...	At sugar.
Cucullia chamomillæ ...	Charlton	A. Jones	July ...	J. F. in litt.	
Xylina petrificata	Torquay	Rev. J. Greene ...	...	Entom. 116 ...	At ivy bloom.
Cucullia asteris	Darenth	E. Meek	...	Verb. Com. ...	Bred from larvæ captured.
Heliothis marginata ...	Darenth	T. Blackmore ...	June ...	In litt.	
	Hartlepool	R. Merryweather...	June ...	E. M. M. 144 ...	At flowers of *Silene*.
Heliothis peltigera	Devonport	— Dell	...	T. B. in litt.	
Heliothis armigera	Exeter	.. ...	Past autumn	J. H. in litt. ...	At sugar.

Local and Scarce British Lepidoptera captured in 1864—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Erastria venustula	Epping Forest ...	R. W. Wright ...	July 4 ...	Entom. 72 ...	One specimen.
	Epping Forest ...	Dr. B. Gill ...	...	Verb. com. ...	Three specimens.
Hydrelia uncana	Tuddenham	E. Skepper ...	August ...	E. M. M.	
Plusia pulchrina	Hartlepool	R. Merryweather	June ...	E M. M. 144 ...	At flowers of *Silene.*
Toxocampa pastinum ...	Freshwater	J. Fenn	June ...	In litt.	
Toxocampa craccæ	North Coast Devon...	Rev. E. Horton ...	July (e.) ...	E. M. M. 96 ...	Habits recorded; food of larva *Vicia sylvatica.*
Ophiodes lunaris	Ireland	P. Bouchard ...	...	F. B. verb. com.	
Ennomos fuscantaria ...	Taunton	A. J. Spiller ...	...	Y. E. 248 ...	Bred.
	Lowestoft	E. Skepper ...	August ...	E. M. M. ...	At light.
Ennomos erosaria	Haselmere	C. G. Barrett ...	July & Aug.	In litt.	Flying in woods at night.
Nyssia hispidaria	Sheffield	J. Swinden ...	March ...	Y. E. 117	
	Taunton	A. J. Spiller ...	...	Y. E. 248 ...	Commonly at light.
Boarmia abietaria	Leith Hill	C. Miller	July ...	J. F. in litt.	
Psodos trepidaria	Perthshire	N. Cooke	June ...	E. B. in litt.	
Boletobia fuliginaria ...	Clapham	W. Dawking ...	July 8 ..	Entom. 70	
Geometra papilionaria ...	Surlingham	J. Fenn	July & Aug.	J. F. in litt. ...	Among alders.
Phorodesma bajularia ...	Shooters Hill ..	A. Jones	June ...	J. F. in litt.	
	Chertsey	A. H. Clarke ..	June 22 ...	In litt.	In an oak plantation.
Hyria auroraria	Tuddenham	E. Skepper ...	August ...	E. M. M.	
	Near Taunton ..	A. J. Spiller ...	May ...	Y. E. 248 ...	A few specimens.
Eupisteria heparata... ...	Coombe Wood ...	G. B. Longstaff ...	May ...	E. M. M. 72 ..	Very local.
Acidalia rubricata	Near Brandon ...	F. Bond	July 28 ...	E. M. M. 96 : Entom. 70	Nine specimens — eggs obtained.
Acidalia contiguaria ...	Bangor	B. Kendrick ...	July 7 ...	Entom. 70	
Acidalia rusticata ...	Portland	T. Blackmore ...	July (e.) ...	E. M. M. 122 ...	A local species.
Acidalia subsericiata ...	Wimbledon	T. Blackmore ...	...	In litt.	
Acidalia straminata... ...	Haslemere	C. G. Barrett ...	July ...	In litt.	Beaten out of holly on heath.
	Wokingham	Rev. E. Horton ...	June (e.) ...	E. M. M. ...	Over a bare part of the heath.
Acidalia inornata	Bournemouth ...	H. G. Knaggs ...	July (e.) ...	H. G. K. ...	Not scarce.
Acidalia degeneraria ...	Portland	T. Blackmore ...	July (e.) ...	E. M. M. 122	
Aleucis pictaria	Essex	J. B. Blackburn ..	...	E. M. M. 120	
Aventia flexula	Wokingham	Rev. E. Horton ...	June (e.) ...	E. M. M.	

Aventia flexula	Box Hill	J. Fenn	July & Aug.	In litt.	
Macaria alternata	Near Taunton	A. J. Spiller	June	Y. E. 248	Two specimens by beating.
Fidonia brunneata	Perthshire	N. Cooke	June	E. B. in litt.	
Emmelesia tæniata	Killarney	E. Birchall	August	In litt.	
Emmelesia unifasciata	North Devon	Rev. E. Horton	June (e.)	E. M. M. 144	
	Hartlepool	R. Merryweather	June (e.)	E. M. M. 144	
Eupithecia pulchellata	Near Taunton	A. J. Spiller	...	Y. E. 248	Much more commonly found since the discovery of the larva.
Eupithecia tripunctata	Blackheath	J. Fenn	Sept.	In litt.	In larva state.
	Alphington	H. D'Orville	July 5	E. M. M. 73	? Double-brooded.
Eupithecia trisignaria	Haslemere	C. G. Barrett	June & July	In litt.	Bred from *Angelica*.
Eupithecia fraxinata	...	E. Meek	May 19	E. M. M. 50	Bred from larvæ beaten from ash.
	Haslemere	C. G. Barrett	May	In litt.	On a fir trunk.
Eupithecia indigata	Plumstead	J. & C. Fenn	May	J. F. in litt.	
Eupithecia tenuiata	Surlingham	J. Fenn	August	In litt.	Commonly.
	Sheffield	I. Swinden	April	Y. E. 117	Larvæ in sallow catkins.
Eupithecia subciliata	Denbigh	B. Kendrick	July 7	Entom. 70	
	Canterbury	B. Piffard	July	Verb. com.	
Lobophora sexalata	Haslemere	C. G. Barrett	June	E. M. M. 74	Flies along sallow hedges at dusk.
Thera firmaria	Bournemouth	H. G. Knaggs	July (e.)	H. G. K.	A few specimens.
Anticlea rubidata	Lewisham	C. & J. Fenn	June	In litt.	
Anticlea berberata	Bury St. Edmonds	E. Skepper	August	E. M. M.	In plenty.
Coremia quadrifasciaria	Wokingham	Rev. E. Horton	June (e.)	E. M. M.	
	Chertsey	A. H. Clarke	July 21	In litt.	
Phibalapteryx lignata	Lewisham	A. Jones & C. Fenn	July, Aug.	In litt.	
Scotosia vetulata	Croydon	R. M'Lachlan	July	J. F. in litt.	
Scotosia rhamnata	Surlingham	J. Fenn	July, Aug.	J. F. in litt.	
Cidaria sagittata	From Chatteris	W. Buckler	June (?)	E. M. M. 71	Larva taken by A. Fryer.
Cidaria silaceata	Tilgate Forest	J. Fenn	May	In litt.	
Chesias obliquaria	Plumstead	A. Jones & J. Fenn	May	J. F. in litt.	
Madopa salicalis	Haslemere	C. G. Barrett	May(e.)June	E. M. M. 73	Habits noticed.
Hypena crassalis	Leith Hill	C. Miller	June	J. F. in litt.	
Hypena albistrigalis	Chertsey	A. H. Clarke	Sept. 3	In litt.	At sugar.
Hypenodes costæstrigalis	North Devon	Rev. E. Horton	July (e.)	E. M. M. 145	
Herminia derivalis	Herne Bay	C. T. Cruttwell	August 1	Y. E. 287	One by beating.

Local and Scarce British Lepidoptera captured in 1864—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Aglossa cuprealis	Highgate	W. P.	...	Y. E. 248 ...	Should be looked for in flour mills.
Botys asinalis	North Devon ...	Rev. E. Horton ...	July (e). ...	E. M. M. 145	
	Portland	T. Blackmore ...	July (e.) ...	E. M. M. 123 ...	In crevices of rocks.
Spilodes sticticalis	Near Brandon ...	F. Bond	July (e.) ...	E. M. M. 96 ...	Two fine specimens.
Scopula alpinalis	Perthshire	N. Cooke	June ..	E. B. in litt.	
Nola strigula	Haslemere	C. G. Barrett ...	July ...	In litt.	At sugar.
Simaethis pariana	Highgate	C. T. Crutwell ...	...	Y. E. 287 ...	Commonly.
Chorentes scintillulana ...	Highgate	C. T. Crutwell ...	...	Y. E. 287 ...	Ditto.
Eudorea pallidulalis ...	Surlingham	J. Fenn	August ...	In litt.	
Anerastia lotella	Bournemouth ...	R. M'Lachlan ...	July ...	Verb. com.	
Cryptoblabes bistriga ...	Haslemere	C. G. Barrett ...	June, July .	In litt.	Beaten from hedges.
Nyclegretis achatinella ...	Yarmouth	T. Brown	...	Ent. Soc. Aug.	
Myelois advenella	Haslemere	C. G. Barrett ...	August ...	In litt.	Beaten from oak.
Myelois pinguis	Regent's Park ...	Dr. B. Gill ...	July ...	Verb. com. ...	On ash trees.
Crambus falsellus	Lewisham	J. & C. Fenn ...	August ...	J. F. in litt.	
Crambus hamellus	Haslemere	C. G. Barrett ...	August ...	In litt.	On heath among grass.
Crambus fascelinellus ...	Yarmouth	T. Brown	...	F. B. verb. com.	
Crambus pinetellus	Freshwater	J. Fenn	August ...	In litt.	
Crambus latistrius	Haslemere	C G. Barrett ...	August ...	In litt.	Among heath in a marsh.
	Canterbury	B. Piffard	August ...	Verb. com. ...	Common.
	Herne Bay	H. Vaughan ...	August ...	Verb. com.	
Dichelia grotiana	North Devon ...	Rev. E. Horton ...	June (e.) ...	E. M. M. 144.	
Tortrix cratægana	Haslemere	C. G. Barrett ...	June, July .	In litt.	Flying at sun-set in woods.
Tortrix cinnamomeana ...	Haslemere	C. G. Barrett ...	July ...	In litt.	Beaten from oak.
Catoptria parvulana	Freshwater	J. Fenn	July ...	In litt.	
Dicrorampha consortana ...	Haslemere	C. G. Barrett ...	July ...	In litt.	Among low herbage.
Hedya servillana	Haslemere	C. G. Barrett ...	May, June .	In litt.	Among sallows.
Steganoptycha geminana ...	Haslemere	C. G. Barrett ...	July ...	In litt.	Among *Vaccinium.*
	North Devon ...	Rev. E. Horton ...	June (e.) ...	E. M. M. 144.	
Anchylopera ramella ...	Haslemere	C. G. Barrett ...	May to Aug.	In litt.	Among aspen, and flying at sunset.

Anchylopera diminutana ...	Haslemere	C. G. Barrett ...	June ...	In litt.	Among sallows.
Anchylopera biarcuana ...	Haslemere	C. G. Barrett ...	June ..	In litt.	In woods among undergrowth.
Peronea permutana	New Brighton ...	J. Peers	August 16 ...	Entom. 97.	
Paramesia caledoniana ...	Woolston Moss ...	J. Peers	...	Entom. 63 ...	Bred from larvæ on *Myrica gale*.
Pœcilochroma Hawkcrana	Bournemouth ...	T. Blackmore ...	July ...	E. M. M. 123 ...	A new locality for this species.
Pœcilochroma oppressana...	Edmonton	B. Piffard	June ...	E. M. M. 51 ...	On poplar trees.
Roxana arcuella	Heslemere	C. G. Barrett ...	May, June .	In litt.	Flying over oak bushes in the afternoon.
Ephippiphora nigricostana .	Haslemere	C. G. Barrett ...	June ...	In litt.	Flying along hedges.
Semasia ephippana	Haslemere	C. G. Barrett ...	August ...	In litt.	Flying in the afternoon round sallows.
Retinia pinivorana	Bournemouth ...	H. G. Knaggs ...	July ...	H. G. K.	
Retinia sylvestrana... ...	Bournemouth ...	H. G. Knaggs ...	July ...	H. G. K. ...	Among stone pine.
Endopisa Germarana ...	Haslemere	C. G. Barrett ...	June ...	In litt.	
Endopisa puncticostana ...	Haslemere	C. G. Barrett ...	June ...	In litt.	Over low herbage in sunshine.
Euchromia purpurana ...	Haslemere	C. G. Barrett ...	July ...	In litt.	Flying over short herbage.
Sericoris littorana	Howth	E. Birchall ...	July, Aug. .	In litt.	
Sericoris bifasciana	Bournemouth ...	H. G. Knaggs ...	July ...	H. G. K. ...	Abundant among pine.
Chrosis Audouinana ...	Haslemere	C. G. Barrett ...	June ...	In litt.	On a fence, and flying among oak.
Argyrolepia Baumanniana...	Haslemere	C. G. Barrett ...	May, June .	In litt.	Among rushes in wood paths.
	Freshwater	J. Fenn	July ...	In litt.	
Argyrolepia Cnicana ...	Haslemere	C. G. Barrett ...	June ...	In litt.	Among herbage in woods.
Eupœcilia sodaliana ...	Darenth	E. Meek	June 29 ...	E. M. M. 123 ...	Out of buckthorn.
	Croydon	J. Fenn	July ...	In litt.	
Eupœcilia ambiguana ...	Haslemere	C. G. Barrett ...	May, June...	E. M. M. 74 ...	Among *Rhamnus frangula*.
Eupœcilia curvistrigana ...	Haslemere	C. G. Barrett ...	August ...	In litt.	Among underwood.
Eupœcilia subroseana ...	Haslemere	C. G. Barrett ...	June to Aug.	In litt.	Among long grass, in woods.
Pterophorus osteodactylus...	Wokingham	Rev. E. Horton ...	June (e.) ...	E. M. M. 145.	
Pterophorus isodactylus ...	Killarney	E. Birchall ...	August ...	In litt.	
Pterophorus punctidactylus	Haslemere	C. G. Barrett ...	...	In litt.	

Larvæ (excepting those of the Genus Eupithecia) detected and described in 1864.

Species.	Date.	Food.	Where and by whom described.	Remarks.
Cœnonympha Davus ..	Feeds in May ..	Near the roots of cotton grass	Intell. vol. i. p. 35, noticed by J. Chappell	Accidentally omitted in last year's table.
„	Hatches July 25	Rhyncospora alba ..	Zool. 9252, S. Hudson ..	Young larvæ described.
Dosithea contiguaria..	September ..	Calluna vulgaris ..	Noticed in Proc. N. Ent. Soc., Sept. 1864.	
Acidalia immutata ..	Hatches July 22; full-fed May (c.), June (b.)	Polygonum aviculare..	Ent. Mo. Mag. vol. i. p. 72, Rev. J. Hellins	Eggs laid July (m.)
Lozogramma petraria..	Hatches May 28; full-fed June (e.)	Pteris aquilina ..	Ent. Mo. Mag. vol. i. p. 71, Rev. J. Hellins	Described simultaneously on the Continent.
Eudorea coarctalis ..	Full-fed Sept. (b.)	Among moss	Zool. 8916, C. G. Barrett..	Feeds in galleries.
Tortrix viburnana ..	..	Andromeda polifolia and Myrica gale	Entom. 63, John Peers ..	Pupa also described.
Paramesia caledoniana	July 6	Myrica gale	Entom. 63, John Peers ..	Screws up the terminal shoots.

LEPIDOPTERA.

Notes on Eupitheciæ.

By the Rev. H. Harpur Crewe, M.A.

Since my last notes on the larvæ of the genus *Eupithecia* appeared in the "Annual" two years since, I have been successful in working out the life-history of four additional species of this most interesting but, comparatively speaking, neglected family, viz. *E. debiliata*, Hüb., *E. pulchellata*, Steph., *E. lariciata*, Frey, and *E. campanulata*, H.-S. The first named species, *E. debiliata*, was, till quite lately, considered one of our rarest British insects, and its larva was unknown both here and on the Continent. M. D'Orville of Alphington near Exeter, and Dr. Breyer of Brussels, have been mainly instrumental in working out its œconomy, and to them I am indebted for almost all my knowledge of itself and its habits. *E. pulchellata*, though pretty well known and widely distributed in the perfect state, had, till the present summer, baffled all the efforts of Entomologists at home and abroad to discover its larva. My valued and indefatigable correspondents, the Rev. J. Hellins of Exeter and Mr. J. B. Hodgkinson of Preston, have at last helped me to solve the mystery, and the larva of *E. pulchellata* will henceforth probably prove one of our commonest caterpillars. The two last-named species, *E. lariciata* and *campanulata*, are entirely new to our British list. For my acquaintance with the larva of the former I am indebted to the kindness of Mr. Edward Hopley, of 14, South Bank,

St. John's Wood. I had the great pleasure and good fortune to discover the larva of *E. campanulata* myself, and thus adding a new species to our British group. I have also, during the past summer, been able to secure descriptions of some very beautiful varieties of the larvæ of *E. fraxinata*, Crewe, from a small brood, the produce of a pair of moths bred in confinement. I append descriptions of the above-named larvæ, together with a few Eupithecian remarks, which I hope will not prove wearisome to the readers of the "Annual." Out of the forty-eight species of *Eupithecia* hitherto known to occur in Great Britain, I have been fortunate enough to breed thirty-nine. I have taken and published as accurate descriptions as I was able of the larvæ, and, through the kindness of my talented and painstaking friend Mr. Buckler of Emsworth, have secured most faithful and life-like coloured drawings. The larvæ only of nine species remain undescribed, viz., *E. consignata*, *Pernotata*, *Plumbeolata*, *Pygmæata*, *Egenata*, *Irriguata*, *Subciliata*, *Togata*, and *Affinitata*. If my entomological brethren at home and abroad will jointly put their shoulders to the wheel, I see no reason why we should not work out the life-history of these nine remaining species during the ensuing year. I have no doubt that as more attention is paid to this hitherto much-neglected genus, many species new to our British lists will keep turning up every year; indeed, I question whether the majority of the Continental species are not natives of Great Britain. It is a most intensely interesting family, and I am sure that every Entomologist who takes up its study will most heartily join with me in saying, "Long live the Pugs!"

H. Harpur Crewe.

The Rectory,
Drayton-Beauchamp, Tring,
October 25th, 1864.

Description of the Larva of Eupithecia debiliata, *Hüb.*

Rather short and stumpy, in general appearance much resembling the larva of *E. rectangulata*, L. Ground colour dull yellowish-green. Whole body rather translucent, and more or less suffused with yellow. Central dorsal line darker green than rest of body. Subdorsal lines wanting. Spiracular lines dull yellow. Head dusky brown or blackish. Belly destitute of markings. Feeds on leaves of *Vaccinium myrtillus*, L., spinning two or more of the young spring leaves together. It is a dull, uninteresting-looking larva, with but few distinguishing characteristics. Full fed from the beginning to the middle of May. Pupa inclosed in a slight earthen cocoon. Resembles the pupa of *E. rectangulata*.

The above descriptions were taken from some larvæ tak near Brussels, and most kindly transmitted to me by their captor, Dr. Breyer. Since then Mr. D'Orville of Alphington has succeeded in taking some larvæ near Exeter, upon *Vaccinium myrtillus*; they were precisely similar to those sent me by Dr. Breyer.

Description of Larva and Pupa of E. pulchellata, *Steph.*

Var. 1. Ground colour dull yellowish-green. Central dorsal line broad, continuous, dull dingy purple. Subdorsal lines dull dingy purple, narrow, interrupted on the anal segments. Spiracular line narrow, broken, dingy purple. Head brownish, marked with lines and spots of a deeper shade. Belly whitish-green, with a whitish central line. Whole body strewed thinly with whitish hairs and occasionally suffused and clouded with dull dingy purple. In shape resembles the larva of *E. linariata*, Sv.; in markings that of *E. centaureata*, Sv.

Var. 2. Ground colour dull yellowish or whitish-green. Central dorsal line dusky green. Subdorsal lines dusky

green. Segmental division yellowish. Spiracular line dull green, very narrow and faint. Belly whitish, without lines or markings.

Var. 3. Ground colour pale primrose, slightly suffused with green. Central dorsal line dull faint green, nearly evanescent on the posterior segments. Subdorsal lines dull faint green, much broken, having more the appearance of detached spots. Spiracular line very faint pale yellow. Belly whitish.

Var. 4. Ground colour bright yellowish-green. Central dorsal line pale olive, narrow. Spaces between central dorsal and subdorsal lines bright yellow. Spiracular line dusky green, faint and broken. Belly sea-green. Feeds upon the flowers of the *common foxglove*, *Digitalis purpurea*, L. It spins the tip of the flower together and feeds principally upon the stamens and occasionally upon the corolla tube and unripe seed capsule.

Hübner has figured some larvæ on *Digitalis lutea* as *linariata*, which may possibly have been this species. Dr. Breyer informs me that Dr. Roessler of Wiesbaden has during the past summer taken some larvæ on *Digitalis ambigua*, which he believes to be this species. Till the present year the œconomy of this insect was a mystery to both home and continental Entomologists. Mr. Hodgkinson of Preston, who takes the moth tolerably freely in the Lake District, has for the last two years been most indefatigable in procuring eggs for Mr. Hellins and myself. Last year, though we supplied the young larvæ with every likely flower, they refused everything and perished miserably of starvation. This summer Mr. Hodgkinson, having mentioned to Mr. Hellins that foxglove was one of the commonest flowers in the locality where the perfect insect occurred, Mr. H. put a few foxglove bells with the other flowers supplied to the

newly-hatched larvæ, and finding that they fed freely upon it he at once communicated this interesting fact to his entomological friends. The result has been that the larva has been taken freely in various parts of England. I have met with it in some numbers in Bucks; some relatives of mine have taken it plentifully on the Staffordshire moors near Leek. Mr. Greene and Mr. George Baker have met with it freely at Cubley and Breadsall Moor near Derby, and I am told that it has been found in some numbers in the Isle of Man. Its habit of spinning the lip of the flower together renders it rather easy of detection. The flower-bells containing larvæ appear to remain on the stem after the others have fallen. The very deciduous character of the flower would otherwise be inconvenient to the well-being of the larva. Pupa enclosed in a slight earthen cocoon. Thorax and wing-cases transparent, yellowish-green. Abdomen reddish-yellow. Abdominal divisions and tip dark red.

Description of the Larva and Pupa of E. lariciata, *Frey.*

Var. 1. Ground colour bright grass-green, somewhat darker on the centre of the back. Anal tip of central dorsal line reddish. Subdorsal lines wanting or so faint as to be scarcely visible. Spiracular line whitish or pale straw-colour. Segmental divisions yellowish. Belly whitish, with a dark green central line. A long slender larva, tapering towards the head. Resembles in general appearance the larva of *E. fraxinata*, Crewe.

Var. 2. Ground colour yellowish-red or reddish-buff. Central dorsal line brownish-olive. Subdorsal lines brownish-olive, occasionally very faint. Spiracular line pale greenish-yellow. Anal tip of central dorsal line reddish. Belly whitish, with a dusky central and two broad lateral lines. Strongly resembles the larva of *E. indigata*, Hüb. Feeds

on *larch* and *spruce fir*. Full fed end of July. Mr. Edward Hopley, who was fortunate enough to take this insect this season in Surrey, sent me most kindly a few impregnated eggs, from which I reared about ten larvæ.

Pupa enclosed in a slight earthen cocoon. Rather long and slender. Thorax yellowish-olive. Wing-cases deep-green. Abdomen yellowish-green, tinged with red. Abdominal divisions and tip red. Perfect insect appears at the end of May and beginning of June.

Description of the Larva of Eupithecia campanulata, *H.-S.*

About the middle of August, 1864, I was fortunate enough to discover a number of larvæ of this species, hitherto undetected in Britain, in a wood near Tring, feeding in and upon the seed capsules of *Campanula trachelium*, L. Having heard from Continental correspondents the habits of *E. campanulata*, H.-S., I at once surmised that my larva belonged to that species; but, in order to make matters sure, I posted two full-fed larvæ in a quill to Dr. Breyer, of Brussels, whom I knew to be well acquainted with the habits of the insect, and he at once informed me that they were true and genuine *Campanulata*. I afterwards found a good many more larvæ, and I imagine that, wherever its food-plant grows, this insect will be found to be common. From its obscure habits, it is not at all surprising that it should hitherto have escaped detection. It seems, unlike many of its congeners, to be, comparatively speaking, free from the attacks of ichneumons.

This larva is a true member of the *Absynthiata* group, but at the same time very distinct from all the other individuals of it found in Britain. The following description of it may be interesting to the readers of the "Annual:"—

Rather short and stumpy. In shape closely resembling

the larvæ of *E. minutata*, Gn., and *E. absynthiata*, L. Ground colour light ochreous-brown. Central dorsal line very deep-brown or black, intersecting and uniting a chain of very strongly-defined black or deep-brown lozenge-shaped spots, placed in the centre of each segment. Subdorsal lines blackish or deep brown, very slender and often faint. Head dingy-brown or black. Spiracular and central ventral lines dingy-black or brown. Central dorsal spots becoming confluent and merged in the central line on the anterior and posterior segments. Skin rough and wrinkled, sprinkled with a few short whitish hairs. The ground colour, and that of the dorsal spots, occasionally varies considerably in intensity. Feeds upon the dry corolla tube and unripe seeds and seed capsules of *Campanula trachelium*. When very young it lives in the dry corolla tube, feeding upon the withered stamens and soft surface of the green capsule. When nearly full fed it enters the capsule and feeds on the seeds and interior portion. In confinement it will feed on various garden species of *Campanula*.

Pupa enclosed in a slight earthen cocoon. Thorax and wing-cases golden-yellow. Abdomen reddish. Abdominal divisions and tip red.

Larva of E. fraxinata, *Crewe*.

During the past spring I bred a pair of moths of this species. They paired, and the ♀ laid a batch of eggs upon a sprig of *ash* which I placed in a bottle under a gauze-covered cylinder. From these eggs I reared a small brood of larvæ, which contained some very beautiful varieties. I took descriptions of four of the most remarkable of these, which I append below.

Var. 1. Ground colour deep velvety green. Central dorsal line wanting. Subdorsal lines represented by a series

of pale yellowish-white spots. Spiracular line yellowish-white; on the centre of each segment, between the subdorsal spots and spiracular line, a rather large purple blotch. Belly whitish-green, with a central dark-green line.

Var. 2. Ground colour dull reddish-purple. Central dorsal line deep-dusky purple, enlarged into an arrow-shaped blotch at the segmental divisions. Subdorsal lines dull orange, much broken. Spiracular line bright yellow, orange in the centre, spotted with purple at the segmental divisions and bordered broadly on the lower side with dull purple. Anal tip of central dorsal line reddish. Belly greenish or yellowish, with a narrow central purple line.

Var. 3. Ground colour pale yellowish-olive. Belly paler than rest of the body. Central dorsal line deep purplish-red, enlarged at the centre of the segmental divisions. Subdorsal lines dull yellow, purple at the centre of the segmental divisions. Spiracular line yellow, blotched with purple at the centre of the segmental divisions.

Var. 4. Uniform bright velvety green. Central dorsal and subdorsal lines purple, the former very faint, the latter only appearing in detached spots at the centre of the segmental divisions. Spiracular line pale yellow, blotched on upper side with purple at the centre of the segmental divisions. Centre of belly whitish or yellowish, with a slender central green line.

From the brood whence the foregoing descriptions were taken, some eight or nine moths emerged during the month of September. By placing them in a gauze-covered cylinder containing a sprig of *ash* in a bottle, I obtained three batches of impregnated eggs. These eggs, which were deposited at the back of the leaves and along the ribs, but mostly on the buds of next year's leaves, all hatched about three weeks since. As the *ash* was fast losing its leaves, I tried them with *laurustinus* flowers, and leaves and flowers of the

common *Michaelmas daisy* and the *mugwort, Artemisia vulgaris*. All the larvæ on *Michaelmas daisy* died. Two survived on *mugwort*. Those on *laurustinus* flowers are doing pretty well; on this flower I once before reared a small autumnal brood of this larva. The parent moth was taken at *ivy* blossom in October. I am sorry to say the little wretches are sad cannibals. I have seen one walking about with the body of another nearly as large as himself in his mouth. I apprehend that after a warm summer there is generally an autumnal brood of this insect, but on what plant the larvæ feed I am at a loss to say. Perhaps ivy blossoms may solve the mystery. It may be that out of doors the eggs are deposited on the buds of ash, and remain dormant till the young leaves expand.

Eup. pygmæata, Hüb.

I have lately had the pleasure of inspecting some most beautiful drawings of *Geometræ* and their larvæ and food-plants, executed by a continental Entomologist, M. Carl Plotz. This gentleman figures the larva of *Eup. pygmæata* feeding on the leaves, flowers and seeds of *Stellaria holostea*. It will be worth the while of any Entomologist to examine this plant during the ensuing spring. The larva seems to resemble that of *E. debiliata*, Hüb.

Eup. plumbeolata, Haw.

M. Carl Plotz figures the larva of this insect on the flowers and seeds of some species of *Melampyrum*, apparently *M. arvense*, L. I hope any of my entomological friends, in whose neighbourhood this plant may happen to grow, will bear me in mind when it is in flower. It would be worth while to sweep and examine every other species of *Melampyrum* indigenous to Britain.

October 28th, 1864.

Larvæ of the Genus Eupithecia undescribed in the Manual and described since its Publication.

By the Rev. H. Harpur Crewe.

Eup. subumbrata, Gn., Zool. vol. 18, p. 7216; Annual, 1861, p. 131.

Eup. trisignata, H.-S., Zool. vol. 19, p. 7567.

Eup. lariciata, Frey, Zool. vol. 22, p. 9524; Ent. Mo. Mag. vol. 1, p. 141.

Eup. distinctata, H.-S. (*constrictata*, Gn.), Zool. vol. 19, p. 7762; Annual, 1862, p. 42.

Eup. expallidata, Gn., Zool. vol. 18, p. 7107; Annual, 1862, p. 40.

Eup. assimilata, Gn. (*varieties*), Zool. vol. 17, p. 6790, vol. 18, p. 7107; Annual, 1861, p. 142.

Eup. campanulata, H.-S., Zool. vol. 22, p. 9260; Ent. Mo. Mag. vol. 1, p. 142.

Eup. arceuthata, Frey, Zool. vol. 21, p. 8343 Annual, 1863, p. 122.

Eup. pimpinellata, Hüb. (*denotata*, Gn.), Zool. vol. 17, p. 6735; Annual, 1861, p. 136.

Eup. virgaureata, Doubleday (*pimpinellata*, Gn.), Zool. vol. 17, p. 6694; Annual, 1861, p. 135.

Eup. vulgata, Haw., Zool. vol. 17, p. 6695; Annual, 1861, p. 138.

Eup. valerianata, Hüb. (*viminata*, Doubl.), Zool. vol. 20, p. 8174; Annual, 1863, p. 123.

Eup. isogrammata, Tr. (*Havorthiata*, St. Man.), Zool. vol. 17, p. 6609; Annual, 1861, p. 132.

Eup. dodoneata, Gn., Zool. vol. 19, p. 7679; Annual, 1862, p. 40.

Eup. tripunctata, H.-S., Zool. vol. 19, p. 7568.

Eup. indigata, Hüb., Zool. vol. 20, p. 8174.

Eup. fraxinata, Crewe (*innotata*, St. Man.), Zool. vol. 17, pp. 6610, 6770; id. vol. 21, p. 8407; vol. 22, p. 9252; Annual, 1861, p. 136.

Eup. debiliata, Hüb., Zool. vol. 21, p. 8648.

Eup. succenturiata, L., Zool. vol. 19, pp. 7796, 7797; Annual, 1862, p. 43.

Eup. pulchellata, Steph., Zool. vol. 22, p. 9253; Ent. Mo. Mag. vol. i. p. 95.

NEW BRITISH TINEINA.

By H. T. Stainton, F.L.S.

On the present occasion I have really only two actual novelties to record, *Depressaria olerella* and *Gelechia pinguinella*; but the discovery of the larva of *Gelechia Lathyri* having led to the interesting fact that that species had been misnamed by us *Nigricostella*, I have thought it desirable to give a detailed notice of the species here.

Depressaria olerella, Zeller.

D. olerella, Zeller, Linn. Ent. ix. p. 337.

D. olerella, Stainton, Nat. Hist. Tineina, vi. p. 240.

Of this species, nearly allied to *D. albipunctella*, but immediately distinguished by the much more angulated pale hinder fascia, I have before me six specimens captured at Woolmer Forest, near Haslemere, by Mr. C. G. Barrett.

Having so recently described the species in the Natural History of the Tineina, though then unaware of its occurrence in this country, I quote the description there given.

"By the presence of a white spot on the disc, beyond the middle, it reminds one strongly of *Albipunctella*, but in that species the pale hinder fascia is much less sharply angulated than in *Olerella*. It also closely resembles *Pulcherrimella*, but the more angulated fascia serves likewise to distinguish it from that species, besides which the head and thorax, though paler than in *Albipunctella*, are considerably darker

than in *Pulcherrimella;* moreover, the terminal joint of the palpi in that species is pale, with two distinct black rings; in *Olerella*, except the extreme tip, which is pale yellowish, it is entirely of a blackish-brown.

"Expansion of the wings 9 lines.

"Head reddish-grey, face paler; second joint of the palpi reddish-grey, darker beneath; terminal joint entirely blackish-brown, except the extreme tip, which is yellowish. Antennæ reddish-brown; anterior wings reddish-brown, with numerous short, black, longitudinal streaks, interspersed with whitish scales; a small white spot on the disc, beyond the middle, is rather conspicuous (though less so than in *Albipunctella*): beyond it is the pale hinder fascia, rather sharply angulated, and followed by a dark-fuscous cloud; cilia reddish-grey; posterior wings pale grey, with greyish cilia.

"The larva is green, with the dorsal vessel slightly darker, and a reddish tinge on the back, most distinct along the sub-dorsal lines; the head is brown, darker behind; the second segment has two black lunular marks.

"It feeds on the common yarrow (*Achillea millefolium*) from the middle of June to the beginning of July; it draws several leaves towards the stem, and, fastening them there, constructs a tolerably secure habitation, within which the full-fed larva frequently undergoes its transformation to the pupa state. The perfect insect makes its appearance at the beginning of August, and is sometimes met with in the spring after hybernation."

Gelechia Pinguinella, Treitschke.

Hæmylis pinguinella, Treitschke, ix. 1, 244.

G. pinguinella, Frey, Tin. u. Pter. d. Schweiz, p. 100.

Specimens of this insect, which is quite new to the British List, were exhibited by Mr. Bond at the August meeting of

the Entomological Society of London; they had been taken near London, on the trunks of poplars.

It is a large, dull insect, allied to *Populella* and *Nigra;* grey, with obscure, pale-olive markings; on the Continent it appears to be common and widely distributed.

Exp. of the wings 9-10 lines.

Head grey, face paler; palpi internally whitish-grey, externally brownish; antennæ dark fuscous, with slightly paler annulations.

Anterior wings dull greyish-brown, with a few darker markings and some ill-defined paler markings of an olive tint; the most conspicuous of these is the simply and obtusely angulated pale hinder fascia; along the disc two pale blotches are generally perceptible, the second frequently containing a small dark spot, and thus having an ocellated appearance; the space between these pale spots is generally much darker than the ground colour, and a dark blotch also precedes the first pale spot; on the costa are two dark blotches, one of them in the middle, the other immediately before the pale hinder fascia; cilia olivaceous-fuscous, with the tips paler. Posterior wings greyish-fuscous, with paler cilia; abdomen greyish-fuscous, with an ochreous patch on the back of the four anterior segments (abdomen of the ♀ prolonged and attenuated posteriorly).

I am told the larva feeds under the bark of poplar trees, and on the 19th May, 1857, I received from my friend Herr Mühlig, of Frankfort-on-the-Main, larvæ as those of this species, but, unfortunately, I did not succeed in rearing any.

Professor Frey observes that the pupæ are sometimes found very plentifully under the bark of poplar trees.

Gelechia Lathyri, n. sp.

Gelechia nigricostella, Sta. (non Dup.). Frontispiece, Fig 1.

In September, 1863, I received from Mr. T. Brown, of

Cambridge, some larvæ new to me, feeding on the leaves of *Lathyrus palustris*; these larvæ were evidently referable to some species of *Gelechia*, but at the time I had not the most remote suspicion of the species they would produce. On the 25th May last, I heard from Mr. T. Brown that he had bred specimens from these larvæ, some of which he sent for my opinion: on looking at these specimens, it was quite evident that it was the insect described in my volume of the "Insecta Britannica," under the name of *Gelechia Nigricostella*: the larva I knew was quite distinct from the larva of *Nigricostella*, and there was, in the perfect insects, sufficient difference to attract my attention.

Mr. Brown very kindly offered to send me a supply of pupæ if I should like to breed the insect myself; this offer I instantly accepted, and within a week I was setting out fresh specimens of a *Gelechia* which was very manifestly not *Nigricostella*, though hitherto known in this country by that name. At the July meeting of the Entomological Society of London I exhibited specimens of this insect, and then proposed for it the name of *Gelechia Lathyri*.

It is larger than *Nigricostella*, the expansion of the anterior wings being 5-5½ lines (that of *Nigricostella* 4½ lines); the anterior wings are more pointed, and the cilia of the hind margin yellow (grey in *Nigricostella*). Moreover, *Lathyri* has no black spot on the fold beyond the middle.

The larva is 4 lines long; dark dull green; head black; second segment black above, with its front edge whitish; anal segment and space between second and third segments paler green; spots very minute, dark grey in pale blotches. An older larva was greener, not so grey; but the head and second segment were equally black. This larva makes a white web along the stalk of *Lathyrus palustris*, and gnaws the stalk and adjoining leaves half through.

OBSERVATIONS ON TINEINA.

By H. T. Stainton, F.L.S.

The past season has not been extremely prolific in Micro-Larvæ; here we suffered from the drought, whilst in Germany the continuously wet weather proved a serious drawback to the collector.

But, notwithstanding, upwards of thirty larvæ have been described and figured—so that the year 1864 has not been altogether unprofitable.

I append here some of the observations made that are likely to prove interesting to my readers.

As in former "Annuals," those species not yet known as British are indicated by an asterisk.

Micropteryx Fastuosella. As I was unable to visit Marlborough at the right time of year for this species, I should not have had an opportunity of adding the portrait of its larva to my collection but for my friend, there located, the Rev. T. A. Preston, who kindly forwarded me a few nut leaves with their tenants from Manton Copse, on the 21st of May. One of these larvæ and its mine has been most excellently figured by Miss Wing.

Theristis Caudella. Mr. Jeffrey kindly sent me from Saffron Walden a fine series of these larvæ *at the end of July and beginning of August.* The specimens which I received from Herr Schmid in 1857 reached me June 19th; so that it either occurs earlier at Frankfort than here, or else

it appears during a longer period than is usual with most larvæ. I was unfortunately not able to get any of the larvæ in 1857 figured, but from one of those received from Mr. Jeffrey early in August, Miss Wing has made a most beautifully characteristic figure.

Mr. Jeffrey sent me the following interesting observations on the habits of this larva:—"I find the larvæ of *Theristis Caudella* feed much more freely at night; by taking a lantern after dark, you may find them resting on the underside of the upper leaves, from which they rapidly descend on the least touch. I have taken them in this way, from the same bushes which I have unsuccessfully beaten, but a short time before sunset."

**Depressaria Petasitis*, Standfuss. Of this species I received some larvæ in May, through the kindness of Herr Ernst Hofmann, then residing at Oberaudorf. Early in May he had made an excursion to a mountain 6,000 feet high, and there found at an elevation of 2,000 feet several species of *Petasites* in blossom; in the stems of *Petasites albus*, *niveus* and *ramosus* he found the larvæ of *Depressaria Petasitis* of various sizes; "it betrays its presence by the withering of the uppermost flowers; the opening to the stem is covered with a light web. Here and there larvæ may be found between flowers spun together, and I afterwards found it most abundant in cylindrical puckers formed on the leaves—these habitations being frequently much filled with excrement." From the larvæ which I received I made the following description, which will probably enable any one who may meet with it here at once to recognise it.

Length 8 lines: pale grey, dorsal vessel greyish-fuscous; spots dark fuscous; head reddish-brown; second segment yellowish-brown; anal segment with a yellowish-brown plate.

The larva, when younger, is almost transparent, with the dorsal vessel reddish; the head black, and a black plate on the posterior half of the second segment.

When at Huddersfield in June I visited Storthes Hall, and there Mr. Inchbald introduced me to an interesting colony of *Petasites albus*, but the season was then too far advanced to admit of a successful search for the larva of *Depressaria Petasitis*.

In 1863 Herr Lederer despatched from Vienna some living larvæ of this species, but they did not succeed in reaching me in a healthy state.

**Gelechia lutatella*, Herrich-Schäffer. To my great delight I received on the 18th June from Professor Zeller some larvæ of this insect found at Meseritz feeding on *Calamagrostis Epigejos*. The larvæ were so similar to those of *Gelechia rufescens* that it was necessary to place larvæ of that species beside them for comparison; but when the comparison was carefully made it proved the distinctness and not the identity of the two species. The difference consists in the markings on the 5th and 6th segments; the anterior brown portion of the 6th segment is of a different shape in the two species, and in the larva of *G. lutatella*, there is also a narrow brown band in front of the 5th segment, which is entirely wanting in the larva of *G. rufescens*.

Perhaps the most singular thing is, that though these larvæ are so similar externally, their digestive apparatus should be so different; for whereas the larva of *G. rufescens* is not at all particular, and eats readily a great variety of grasses, the larva of *G. lutatella* seems entirely restricted in its diet to *Calamagrostis Epigejos*, and though, in default of that, I offered my specimens *Arundo Phragmites* and various other grasses, they preferred starving.

Those who have an opportunity of collecting amongst

Calamagrostis Egigejos, in June, would do well to keep a sharp look out for a *Rufescens*-like larva on that plant.

Professor Zeller subsequently satisfied himself that the perfect insects of the two species were truly distinct.

Gelechia Rhombella. Of the larva of this insect I received a good supply, June 13th, from Jena, where Dr. Schläger finds them very local, to quote his words: "I find them only on three apple trees, which present themselves near the village Lichtenhain, at the slope of a mountain."

These larvæ throve very well with me, and I bred a fine series of the perfect insect. The larva I have thus described:

Length 6 lines: dull dark green, with a whitish line on each side of the back and whitish spiracular line; the belly is pale greenish-grey; head dark brown; second segment above with a black plate divided down the centre. The space between the subdorsal and spiracular lines has more or less of a reddish tinge. The larva feeds between united leaves of apple.

Gelechia Hübneri, Haworth (*Krösmanniella*, H.-S.) Of this insect I received larvæ from Frankfort, kindly forwarded by Herr Mühlig, and from Hanover, for which I have to thank Herr Glitz. The larva is so similar to that of *Gelechia maculea*, which occurs at the same time and on the same plant, that I am rather puzzled to know how to separate the two insects when in the larval condition. My description of it is as follows:

Length $3\frac{1}{2}$ lines: pale green; head black; second segment black, at the sides and front edge more of a brown-black; first pair of legs black; second and third pair of legs green.

Feeds, like *Tricolorella* and *Maculea*, between the united shoots of *Stellaria Holostea;* the larvæ reached me on the 10th and 25th of May.

**Nothris Deflectivella*, Herrich-Schäffer. Through the

kindness of Dr. Schläger I now find myself thoroughly acquainted with the larva of this species; it *is* the same larva which Professor Frey showed me at Zürich, May 3rd, 1857; but those larvæ being then very young were slightly different.

The larvæ from Jena reached me on the 6th of June, and they continued to feed for some time after I had them, the full-fed larvæ being considerably more than half an inch in length: the larva is very conspicuous; the ground colour blackish; the spots black, in faint white rings; the third segment velvety black, with some enamelled with spots between the third and fourth segments. The larvæ which I received from Dr. Schläger were feeding between united leaves of *Trifolium medium*, but I fed them easily with *Trifolium pratense*.

Dr. Schläger wrote me, "I find the larva in the forest on divers species of *Trifolium*, *Fragaria*, *Scabiosa*. They unite the leaves, feeding only on the inner side so long as they are young, but when they get larger they eat the entire thickness of the leaves."

The perfect insects made their appearance with me from the 30th June to the 13th July; they have a slight resemblance to *Nothris Durdhamella*, but are much larger and more ochreous.

Butalis Cicadella, Zeller. This insect stands in our British lists on the authority of a single specimen, captured near Brandon, in Suffolk, some years ago by Mr. Dunning, and to whose liberality I am indebted for the possession of the specimen. Last summer I had the pleasure of making the acquaintance of the larva, Herr Hofmann having very kindly forwarded several to me from Ratisbon. This larva is peculiar in its markings and very pretty. I append my description:

Length 5½ lines: fuscous, with a broad yellow-brown

dorsal stripe, which is more slender and white on the three anterior segments; above the spiracles is a slender whitish line, the space between which and the dorsal stripe is of an olive grey, rather darker anteriorly and darker on its upper and lower edges; head dark brown, mottled with black; second segment brown, with a black semi-lunule on each side of the dorsal line.

This larva forms tubes of sand amongst the roots of its food-plant, *Scleranthus perennis*, which, in Babington's "Manual of British Botany," is given as occurring in "sandy fields in Norfolk and Suffolk."

The larvæ collected by Herr Hofmann at the end of May reached me on the first of June.

Argyresthia Spiniella. Of the larva of this insect I received some specimens from my industrious correspondent at Scarborough, Mr. T. Wilkinson, on the 20th of May.

These larva were 3 lines in length: greenish-grey, with the dorsal vessel showing a faint rosy tinge; head dark brown, almost blackish-brown; the second segment above with two brown spots, front edge of second segment whitish; anal segment brown.

The habit of these larvæ was rather peculiar, being confined to the stems of the *flower*-shoots; it bores down these before the buds are expanded, and by this means some of the central buds assume a withered and brownish appearance, thus betraying the whereabouts of the larva.

**Coleophora Unipunctella*, Zeller. In August last I received from Dr. Schläger some larvæ of this species, feeding on the seeds of *Chenopodium Hybridum*. The case is totally distinct from the cases of *Annulatella* and *Flavaginella*, both of which likewise feed on the seeds of *Chenopodium*. The case of *Unipunctella* is formed of pieces of

seed-husk fastened together, having a most irregular and nubbly appearance.

Coleophora niveicostella. For years I have sought in vain for the larva of this species, but I looked for it on *Leguminosæ*, and particularly on *Hippocrepis comosa*. In June last I received from Herr von Heinemann, of Brunswick, two specimens of a *Coleophora* larva on *Thymus serpyllum*, as being the *Thymiella* of Reutti. Being very anxious to rear the insect, I did not venture to sacrifice one of these larvæ by turning it out of its case, so contented myself with having the *case* figured and making the following note:—"Case very similar to that of *Albitarsella*, but shorter; brown, slightly curved, with a thin keel behind, apparently made of pieces of mined leaf.

"The larva eats out the whole of the parenchyma of the small thyme leaves, which then drop off."

These larvæ were collected by Herr v. Heinemann, June 5th and 7th, several hours search rewarding him with only a few specimens. On the 31st July I bred one perfect insect, and it appears to be identical with what I have in my collection as *Coleophora niveicostella*. As far as I can remember, wherever I have met with that species, *Thymus serpyllum* has been growing at no great distance.

* *Coleophora congeriella*, Staudinger (Stett. Ent. Zet. 1859, p. 254). Of this species I received some larvæ through the kindness of Monsieur Millière of Lyon; they fed on the leaves of *Dorycnium suffruticosum*, a small papilionaceous plant with persistent leaves, not unfrequent in the South of France and Italy. The case is made of pieces of leaves, and is not very unlike the case of *Coleophora Genistæ*; the larva bleaches the small leaves of *Dorycnium*, by eating out the entire parenchyma; the case being attached sometimes to the upper, sometimes to the under surface of the leaf.

Laverna Decorella. On the 26th of August last my eyes were gladdened with the sight of the galls of this species formed in the stems of *Epilobium*, found near Haslemere by that most industrious unraveller of nature's secrets, Mr. Barrett, who wrote to me as follows:—"I had nearly given up for a bad job the idea of finding the larva of *Laverna decorella*, having searched various kinds of *Epilobium* again and again, and to-day I beat out the first specimen of the perfect insect from the same thatch in which they have always occurred most freely, but I determined to try my luck again there, and almost immediately I met with a swelling in the stem of a species of *Epilobium* growing on the spot. The plant was common there, and nearly every plant had one or more of the galls, so I gathered a lot, of which I send you some. Unluckily I am almost too late, for all that I examined contained a pupa or were empty, but I have selected the youngest and most likely-looking galls for you, and hope you may find a larva amongst them. I have also put in some of the older galls to show you the various forms; some apparently contain several pupæ."

On the 31st August, Mr. Barrett wrote:—"I have bred several *Laverna decorella*, the first came out on the 28th inst.;" and ten days later he wrote, "*Laverna decorella* keeps coming out every day from the galls." "A careful examination of the willow-herbs having galls in them, with the assistance of a lady who knows something of botany, satisfies me that the species are *Epilobium parviflorum*, *montanum* and *palustre*. The galls have a different appearance in each species."

The larva when full fed eats a small hole in the exterior of the gall-like swelling of the stem, and then spins a white cocoon, one end of which is protruded through the hole, so that by this contrivance a mode of exit is prepared for the moth beforehand.

**Ochromolopis ictella*, Hübner. Of this conspicuous and peculiar insect I received some larvæ through the kindness of Diaconus Schläger, whose personal acquaintance I had had the pleasure of making the previous autumn at Stettin. The genus *Ochromolopis* is placed by Frey between *Bedellia* and *Chauliodus*; by Staudinger between *Anybia* and *Asychna*; it comprises only one species, which can be instantly recognized by the two slender longitudinal ochreous streaks on the shining dark-grey anterior wings.

From the description that I made of the larva, I quote the following:—

Length 4½ lines: whitish-green, dorsal and subdorsal lines dull dark-green; spots black; head pale brown, posteriorly blackish-brown; second segment with a black plate behind; anal segment with a black plate. A smaller larva, described at the same time, was more fusiform, greener (not whitish-green), with the spots fuscous, with no subdorsal lines and with the plate on the second segment divided in the centre and dark greyish-green (not black), the anal plate dark green. The larva figured by Miss Wing agrees very closely with the latter description, but has a rosy tinge over the green—it is very probable that the green larvæ assume a rosy tint before changing to the pupa state. The food-plant is *Thesium montanum*, the larva feeding in the terminal shoots about the middle of May. Dr. Schläger collected the first larvæ May 13th, and my descriptions were written from some subsequently sent, which reached me May 23rd.

Having written to Dr. Schläger that I was unacquainted with *Thesium montanum*, it not occurring with us, he replied:—"In our country, especially on the chalky hills and mountains, it occurs very frequently, not everywhere, but in lanes and the borders of woods; not rarely in pine-woods. It is a pretty plant and very much like the common flax,

Linum usitatissimum, as to the leaves and stalks; but the graceful little white flowers do not at all resemble the flowers of the flax."

We have one species of *Thesium* in the British Flora, *T. humifusum*, which occurs on chalky and limestone hills; many localities are given in Babington's Flora of Cambridgeshire, and single localities are mentioned in Henslow's Suffolk Flora and in Preston's Flora of Marlborough. To the London Entomologist the localities given in Brewer's Flora of Surrey may prove more interesting, and I therefore quote them:—"Coulsdon; Banstead Downs; Sanderstead; abundant on the grassy slopes in Norbury Park, Mickleham; and on the right hand of the lane leading from Dorking to Ran more Common; Box Hill; Ranmore Common; Hog's Back; and Wanborough chalk-quarries."

Possibly, if searched at the right time, *Thesium humifusum*, might furnish us with the larva of the pretty *Ochromolopis ictella*.

**Phyllobrostis Daphneella*, Staudinger (Stett. Ent. Zeit. 1859, p. 257). When Dr. Staudinger brought specimens of this insect from Spain in 1858, I had scarcely apprehended it would prove interesting to English collectors; but its occurrence in Bavaria leads me to hope that it may yet occur further north. Moreover, as the larvæ found by Dr. Staudinger in Spain were feeding on *Daphne Gnidium*, and those sent me by Herr Hofmann from Ratisbon were on *Daphne Cneorum*, it is quite possible that here we might find it on one of our British species of *Daphne* (*Mezereum* or *Laureola*). When Dr. Staudinger described his Spanish insects he was obliged to construct the new genus *Phyllobrostis* for the reception of the little *Daphneella*, which differs from *Bucculatrix* in the want of an eye-cap at the basal joint of the antennæ, instead of which we observe a small tuft, very

similar to that in *Tischeria;* the tuft on the crown of the head is not so dense as in *Bucculatrix;* it however resembles *Bucculatrix* in the smooth face, naked tongue and want of palpi, and is not very unlike *Bucculatrix cristatella*, but considerably larger and the costal portion of the wing distinctly paler.

It was at the end of March that I received from Herr Hofmann of Ratisbon some larvæ of this interesting species; they were mining the small leaves of *Daphne Cneorum*, of which they ate out the entire substance.

The larvæ are barely 2 lines in length: deep amber, with the dorsal vessel greenish; stout, with the segments deeply incised; the head pale brown; the second segment with two black plates behind of irregular form; the hind lobes of the head show through the anterior part of the second segment.

There are six anterior legs, eight ventral and two anal prolegs.

I believe that none of my specimens attained the pupa state, so that my expectations of finding, some fine morning, a perfect *Phyllobrostis Daphneella* in the cage were doomed to disappointment.

OBSERVATIONS ON LACORDAIRE'S GENERA DES COLÉOPTERÈS, Tome VI.

The great work of Lacordaire, "Genera des Coléoptères," is drawing gradually to a conclusion. The last volume, the sixth, treating of a part of the vast family *Curculionidæ*, appeared last year, and, as in many respects this will probably be the most interesting of all to British Entomologists, we purpose to give a sketch of its contents in the "Annual."

The interest attaching to the *Curculionidæ* in the present work is due not only to the enormous numbers of species* which the family contains, but chiefly to the almost total alteration in the classification which it has undergone at the hands of the celebrated Belgian professor. Hitherto the method pursued by Schönherr has been felt by almost all who have studied the group to be most unsatisfactory. Starting from the fact that the antennæ of the *Curculionidæ* are either straight or geniculate, he at once formed two primary divisions. Into the first of these (*Orthoceri*) many true *Curculionidæ*, such as *Apion*, *Rhynchites*, *Belus*, *Attelabus*, &c., were mixed with the *Bruchidæ*, *Brenthidæ* and *Anthribidæ*, families belonging altogether to other types of form, and which are only to be regarded as allies of the *Curculionidæ*. M. Jekel, in his "Insecta Saundersiana," had

* From 20,000 to 25,000 species are computed by M. Jekel to exist in collections, but then this includes *Anthribidæ*, *Brenthidæ* and *Bruchidæ*, which do not, however, exceed perhaps a couple of thousand altogether.

already combated Schönherr's views of their classification, and now M. Lacordaire comes to expose, *ab initio*, an entirely new arrangement.

Before we proceed further it will be first necessary to take some account of the organs and their modifications, which he considers of sufficient importance as to form the basis of classification. With regard to the parts of the mouth, the labium (*languette*) and the palpi are in this point of view valueless, as also are the maxillæ, and, to a certain extent, the mandibles. The mentum is always received into an emargination of the submentum, and this connection is sometimes established by means of a peduncle between the two. The presence or absence of this peduncle marks the first two of the great divisions of the *Curculionidæ*. The eyes are variable as to form, but M. Lacordaire has observed a remarkable relation between them and the sides of the prothorax. In some cases these sides are more or less lobed, and as the eyes elongate, becoming at the same time more and more transverse, the lobes are developed in proportion; on the contrary, when the lobes do not exist, the eyes are round or only very slightly oval. These lobes M. Lacordaire designates the "ocular lobes." The prosternum is generally entire, but in a great number of genera there is an excavation more or less limited in depth and length, and this in one of the largest groups, *Cryptorhynchinæ*, becomes a deep canal, often extending to the mesosternum, and in one genus, *Panolcus*, even to the extremity of the abdomen. Space will not permit us to dwell on the numerous details given by M. Lacordaire of these and other parts; indeed, these and the generalizations which everywhere abound in this and the preceding volumes are among not the least interesting and useful portions of this remarkable work.

But a character first noticed by M. Suffrian must not be

omitted. If we examine the posterior tibiæ, the extremity will be found to be more or less obliquely truncated; one part of this is occupied by the cotyloid cavity of the first tarsal joint, the outer edge being either entire or so incurved as to form a kind of hollow, varying in depth. These truncations M. Lacordaire calls "corbels" (*corbeilles*), and when the hollow exists they are said to be "cavernous" (*caverneuses*), and "exposed" (*découvertes*) when they preserve their normal form. In the *Mecorhynchi* of Schönherr the cavernous corbels are exceedingly rare, while they are very common in the *Brachyrhynchi*. Among other characters, hitherto rarely employed, but which M. Lacordaire thinks should be strictly attended to, are the relative size of the three intermediate abdominal segments; the form of their posterior margin, according as to whether it is straight, as is usually the case, or prolonged behind at its extremities, as in *Phytobius*, *Baris*, &c.; of the suture which separates the second from the first segment; and, lastly, of the posterior intercoxal process.

The scrobes of the rostrum, or the canals formed for the reception of the scape or basilar joint of the antennæ, afford, by their modifications, characters of the highest value for genera, and in some cases also for higher groups. The number of joints in the funicle or part between the scape and club, and in the club itself, are of scarcely less importance.

We shall now give a rapid summary of M. Lacordaire's general arrangement, and then in a tabular form as much of it as is applicable to the British species of the family. It must be premised, however, that there are always exceptions to some of the characters, but they are relatively very few. There are two primary divisions, or "Legions" as they are called by M. Lacordaire: the first, "CURCULIONIDES ADELOGNATHES" (Maxillæ more or less covered by the

mentum), is divided into two "Cohorts;" the first—*Curculionides Adélognathes Cyclophthalmes* (Prothorax without ocular lobes. Eyes entirely exposed, rounded, or only shortly oval). This contains the three tribes*—*Microcerides*, *Brachyderides*, and *Otiorhynchides*. The second Cohort—*Curculionides Adélognathes Oxyophthalmes* (Prothorax with ocular lobes. Eyes depressed, pointed beneath ar transverse)—also contains three tribes—*Eremnides*, *Leptopsides*, and *Brachycerides*. The second Legion—*Curculionides Phanérognathes* (Maxillæ not covered by the mentum. Sub-mentum pedunculate)—has for its first Cohort—*Curculionides Phanérognathes Symmérides* (Anterior coxæ contiguous). Here two extra ranks are introduced, the "*Phalange*" and the "*Section*," neither of these, however, receiving names. The first Phalanx (Phalange)—(Pygidium covered by the elytra. Claws free or soldered together, never appendiculate, &c.) In it, "Section A" (Metasternum very short; metathoracic epistoma narrow, sametimes linear. Claws free. Apterous), we have ten tribes—*Dinomorphides*, *Byrsopsides*, *Amycterides*, *Somotodides*, *Hipporhinides*, *Rhyparosomides*, *Cylindrorhinides*, *Lithinides*, *Molytides* and *Tanyrhynchides*. In "Section B" (Metasternum in general of middling length, its episterna variable in breadth; but, when very narrow, associated with a metasternum more or less elongate, or with mesothoracic epimera well developed. Claws free or soldered.

* These tribes answer to what in this country are generally called "*sub-families*," and which are known by their termination in "*inæ*" to distinguish them from the "*families*," which by almost universal consent are made to terminate in "*idæ*." It is much to be regretted that this rule, at once so "simple and convenient," should ever be set at nought; but for this summary we have thought it would be more convenient to retain the French form of the names given by M. Lacordaire.

Winged or apterous), there are not less than eighteen tribes—*Scythropides, Promecopides, Gonipterides, Hyperides, Ithycerides, Diabathrariides, Aterpides, Cleonides, Hylobiides, Erirhinides, Amalactides, Ambatides, Petalochilides, Oxycorynides, Belides, Eurhynchides, Cylides*, and *Apionides*. Proceeding to the second Phalanx, we have again two Sections: Section A (Intermediate segments of the abdomen not angulated at their extremities) contains thirteen tribes—*Cybebides, Attelabides, Rhinomacerides, Ectemnorhinides, Mesoptilides, Scolopterides, Erodiscides, Otidocephalides, Magdalides, Balanides, Anthonomides, Ceratopides, Trigonocolides*. With Section B (Intermediate segments of the abdomen angulated at their extremities) we find four tribes—*Coryssomerides, Prionomerides, Tychiides*, and *Cionides*. With the latter this volume terminates.

Many of these tribes are also divided into "*groupes*"—the *Brachyderides*, for instance, into twelve, the *Otiorhynchides* into seventeen, and so on. Some of these groups might probably with advantage be ranked as tribes—*i. e.* sub-families.

From M. Lacordaire's tabular statements of the characters of the tribes and groups scattered through a thick volume of 637 pages, we have made the following analysis of his arrangement as far as it is applicable to the genera of the family which have members indigenous to this country. In this case we have modified the terminations of the names of the sub-families so as to bring them into unison with those adopted by many of our leading Zoologists.

a Maxillæ covered by the mentum; sub-mentum without a peduncle.

b Prothorax without ocular lobes; eyes exposed, round or shortly oval.

c Scrobes linear, directed downwards .... *Brachyderinæ.*
(*Cneorhinus, Liophlœus, Barynotus, Strophosomus, Sciaphilus, Barypeithes, Sitona, Metallites, Polydrosus, Thylacites, Tanymecus.*)

cc Scrobes variable, never linear and directed downwards at the same time ..... *Otiorhynchinæ.*
(*Otiorhynchus, Omias, Trachyphlœus, Phyllobius.*)

bb Prothorax with ocular lobes; eyes depressed, pointed below and transverse; one sub-family only represented in Britain, viz. ..... *Leptopsinæ.*
(*Tropiphorus.*)

aa Maxillæ not covered by the mentum; sub-mentum mostly pedunculate.

d Anterior coxæ contiguous or very slightly separated.

e Pygidium covered by the elytra, claws never appendiculate.

f Metasternum very short; metathoracic episterna narrow or linear.

g Sub-mentum without a peduncle ..... *Byrsopsinæ.*
(*Gronops.*)

gg Sub-mentum with a peduncle.

h Tibiæ unarmed or only very shortly mucronate at the end ..... *Rhyparosominæ.*
(*Styphlus, Orthochætes.*)

hh Tibiæ unguiculate at the end ..... *Molytinæ.*
(*Molytes, Leiosoma, Plinthus, Trachodes.*)

ff Metasternum of moderate length at least, its episterna variable.

i Antennæ geniculate.

j Claws of the tarsi united at their base ..... *Cleoninæ.*
(*Cleonus, Rhinocyllus, Lixus.*)

jj Claws of the tarsi free.

k Tibiæ rounded.

l Rostrum robust.....*Hyperinæ.*
(*Alophus, Hypera,* Limobius.*)

ll Rostrum slender.....*Erirhininæ.*
(*Procas, Grypidius, Erirhinus, Dorytomus, Mecinus, Hydronomus, Bagous, Tanysphyrus, Smicronyx, Anoplus, Brachonyx.*)

kk Tibiæ compressed.....*Hylobiinæ.*
(*Lepyrus, Hylobius, Pissodes.*)

ii Antennæ straight .....*Apioninæ.*
(*Apion.*)

ee Pygidium exposed; if not, then the claws of the tarsi appendiculate, divided or toothed.

m Intermediate segments of the abdomen not angulated at their extremity.

n Antennæ straight.

o The first two segments of the abdomen soldered together.....*Attelabinæ.*
(*Apoderus, Attelabus.*)

oo All the abdominal segments free ....*Rhinomacerinæ.*
(*Rhynchites, Rhinomacer.*)

nn Antennæ geniculate.

p Posterior angles of the prothorax acute ..*Magdalinæ.*
(*Magdalis.*)

pp Posterior angles of the prothorax rectangular at most.

* M. Lacordaire gives the following in a note to this genus. "Syn. *Phytonomus*, Schönh. Curcul. Disp. Meth. p. 175; a name five years posterior to that imposed on this genus by Germar, and wrongly adopted by almost all Entomologists. Germar having given very detailed characters of his genus *Hypera*, Schönherr is without excuse in changing the name." The same may be said of the genera *Sitona, Sibynia, Magdalis, Leiosoma, Baris*, &c., which Schönherr has altered in the same wanton manner. We hope to see a return to the older names.

q Prosternum elongate before the anterior coxæ
Balanininæ.
(*Balaninus, Balanobius.**)

qq Prosternum very short before the anterior coxæ
Anthonominæ.
(*Anthonomus, Acalyptus, Orchestes.*)

mm Intermediate segments of the abdomen angulated at their extremity.

r Funicle of six or seven joints .....*Tychiinæ.*
(*Elleschus, Tychius, Sibynia.*)

rr Funicle of five joints .....*Cioninæ.*
(*Cionus, Nanophyes.*)

We hope to finish our analysis of this important work, so far as it relates to this family, when the next volume shall have appeared. In the meantime every Coleopterist should possess himself of it. Few persons who have not seen the work can imagine the immense amount of research involved in the investigation of the multitudinous receptacles of Entomological literature here manifested, or the laborious examination of specimens, the type of almost every genus having been lent to him for that purpose, and the masterly skill with which the whole is placed before the reader. Nothing appears to be omitted; every genus is fully described and critically analyzed, and the species to be referred to it are carefully enumerated in the foot-notes, as well as the works in which they were published. All that is known of their habits and economy is concisely stated, and their geographical distribution briefly noticed. Not the least worthy of remark is the cheapness of these volumes. Here is an an octavo of between 600 and 700 pages, much of it closely printed, for a little more than five shillings (6f. 50c.)

* A genus of M. Jekel's, which we think might be adopted with advantage. The type is *B. brassicæ*, Fab.

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